HVAC

Heating Air Conditioning

01 ON BOARD DIAGNOSTIC (OBD)

AUTOMATIC CLIMATE CONTROL SYSTEM, ON BOARD DIAGNOSTIC (OBD)

Automatic Climate Control System, On Board Diagnostic (OBD)

NOTE:

- **There are various versions of the operating and display module, Climatronic Control Module J255. Attention must therefore be paid to the exact assignment when replacing an operating and display module .**
- **Depending on the date of issue, the operating and display module, Climatronic Control Module J255 may also be referred to as A/C Control Head E87 in various workshop publications (e.g. in wiring diagrams for vehicles up to Model Year 2004).**
- **On this vehicle, the diagnostic connections of various control modules (e.g. radio) are wired to a different diagnostic connector pin. To permit the exchange of data with these control modules, the diagnostic cable between the vehicle and the vehicle diagnostic system (e.g. Diagnostic Operation System VAS 5051A or Vehicle Diagnosis Service Syst. VAS 5052) must be installed with the K-Lead Adapter VAS6017B VAS 6017B (or the K-Lead Adapter VAS 6017A).**
- **As of VIN "400000" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN) and depending on vehicle equipment, certain control modules will no longer be connected to the K/L-wire of the 16-pin diagnostic socket in the vehicle (e.g. Engine Control Module (ECM) J623 , Transmission Control Module (TCM) J217 and Airbag Control Module J234). These control units use "CAN signal wires" to exchange information for example with the Diagnostic Operation System VAS 5051A. As the K-Lead Adapter VAS 6017A is not provided with these connections, the K-Lead Adapter Vas6017B VAS 6017B is required for the On Board Diagnostic (OBD) of these control modules.**
- **In order to be able to perform On Board Diagnostic (OBD) with the Fault Read Out Device V.A.G 1551 or the Mobile Scan Tool V.A.G 1552 on this vehicle, the program card in the Fault Read Out Device V.A.G 1551 must correspond to at least data version "No. 9" and in the Mobile Scan Tool V.A.G 1552 to at least data version "No. 6". For vehicles as of VIN "400000" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN , On Board Diagnostic (OBD) using the Fault Read Out Device V.A.G 1551 or the Mobile Scan Tool V.A.G 1552 will no longer be possible for all vehicle systems.**

On Board Diagnostic (OBD), technical data

Equipment

- The DTC memory is static and is thus independent of the power supply.
- Data are transmitted between the operating and display module, Climatronic Control Module J255 and the Diagnostic Operation System VAS 5051A , the Vehicle Diagnosis Service Syst. VAS 5052 , the Fault Read Out Device V.A.G 1551 or the Mobile Scan Tool V.A.G 1552 in "Rapid data transfer" mode.

Function

The A/C operating and display module, Climatronic Control Module J255 is equipped with a DTC memory.

After evaluation, the operating and display module, Climatronic Control Module J255 distinguishes between different malfunctions --> **Diagnostic Trouble Code (DTC) table** and saves them until the DTC memory is erased after check.

Malfunction recognition

Malfunctions occurring in monitored sensors and components are stored in the DTC memory together with the malfunction type.

The first step in the troubleshooting process is always to start On Board Diagnostic (OBD) and check the DTC memory. This can be performed with the following:

- Diagnostic Operation System VAS 5051A
- Vehicle Diagnosis Service Syst. VAS 5052
- Fault Read Out Device V.A.G 1551
- Mobile Scan Tool V.A.G 1552

The stored DTC displayed can be compared with a DTC table (containing information on possible causes of trouble) to perform specific repair procedures.

NOTE:

- **If a malfunction exists for longer than a certain period, the malfunction is stored as being static. If the malfunction situation is then no longer detected for a predetermined period, the malfunction is reclassified as being sporadic. This process is constantly repeated. Sporadic malfunctions are additionally identified as such by/SP on the display.**
- **A sporadic malfunction is erased automatically if it no longer occurs for a predetermined period.**

The On Board Diagnostic (OBD) options can only be performed with the Diagnostic Operation System VAS 5051A , the Vehicle Diagnosis Service Syst. VAS 5052 , the Fault Read Out Device V.A.G 1551 or the Mobile Scan Tool V.A.G 1552 in mode "1" (Rapid data transfer).

On Board Diagnostic (OBD) is not restricted to storage, checking, erasing and Output Diagnostic Test Mode

(DTM) diagnosis. It also has basic setting, control module identification, adaptation and coding functions.

Mode "2" (blink code output) is not available for the A/C heater electronics. Modes "3" (self-test) and "4" only apply to the Fault Read Out Device V.A.G 1551 and the Mobile Scan Tool V.A.G 1552 and are described in the relevant operating manuals.

Available functions

Diagnostic Operation System VAS 5051A		**Ignition switched on, engine not running**	**Engine idling**	**Vehicle in drive mode**	**Refer to**
Address words					
08	A/C heater electronics	Yes	Yes	Yes	--> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**
00	Automatic test sequence	Yes	Yes	Yes	--> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**
Functions					
01	Checking control module version	Yes * See note[1]	Yes * See note[1]	Yes * See note[1]	--> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**
02	Checking DTC Memory	Yes	Yes	Yes	--> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)**
03	Output Diagnostic Test Mode (DTM)	Yes/No * See note[2]	No/Yes * See note[2]	No * See note[2]	--> **Output Diagnostic Test Mode (DTM) (function 03)**
04	Performing basic	Yes	Yes	No	--> **Basic**

	setting				**Setting (function 04)**
05	Erasing DTC Memory	Yes	Yes	Yes	--> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)**
06	End of output	Yes	Yes	Yes	--> **End Output (function 06)**
07	Coding control Module	Yes * See note[3]	Yes * See note[3]	No	--> **Climatronic Control Module J255, coding (function 07)**
08	Read measuring value block	Yes	Yes	Yes	--> **Read Measuring Value Block (function 08)**
10	Adaptation * See note[4]	Yes	Yes	No	--> **Climatronic Control Module J255, Adaptation (function 10)**

* 1- The control module version is always displayed on the Diagnostic Operation System VAS 5051A during the On Board Diagnostic (OBD) process.

* 2- Output Diagnostic Test Mode (DTM) diagnosis can only be performed up to an engine speed of 3000 RPM and at vehicle speeds below 5 km/h. The A/C Compressor Regulator Valve N280 is only activated by the operating and display module, Climatronic Control Module J255 with the engine stopped. The request for activation of the Coolant fan (1 to 100%) is transmitted by the operating and display module, Climatronic Control Module J255 to the relevant engine control module via the comfort and drive CAN-Bus systems. However, the engine control module only switches on the Coolant Fan V7 when the engine is running "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.

* 3- On this vehicle, the basic settings (e.g. country version, left-hand drive or right-hand drive) of the operating and display module, Climatronic Control Module J255 are coded by the Instrument Cluster Control Module J285. The data are transmitted via the CAN-Bus comfort system to the operating and display module, Climatronic Control Module J255. The currently valid code is displayed in the measuring value block --> **Read Measuring Value Block (function 08)**. Direct coding in the operating and display module, Climatronic Control Module J255 is only provided for certain optional equipment (e.g. Heated Windshield Z2 or sunroof with solar cells, etc.). "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

* 4- As of the hardware/software version "0711" of the operating and display module, Climatronic Control

Module J255 , the VIN transmitted via the CAN-Bus comfort system is stored on initial start-up of the operating and display module, Climatronic Control Module J255. If such an operating and display module, Climatronic Control Module J255 is installed in a different vehicle, this VIN must be erased via the "Adaptation" function.

NOTE:

- **This article describes On Board Diagnostic (OBD) using the Diagnostic Operation System VAS 5051A.**
- **On Board Diagnostic (OBD) can be performed using the Vehicle Diagnosis Service Syst. VAS 5052 , the Fault Read Out Device V.A.G 1551 or the Mobile Scan Tool V.A.G 1552. In order to have a record of any faults, it is appropriate to connect the Diagnostic Operation System VAS 5051A or the Fault Read Out Device V.A.G 1551 before erasing the DTC memory and to print out the faults present (the Mobile Scan Tool V.A.G 1552 is not equipped with a printer).**
- **If a new operating and display module, Climatronic Control Module J255 has been installed and Basic Setting was not performed after installation, the A/C Compressor Regulator Valve N280 is not activated and display group "002" in the measuring value block indicates compressor shutoff condition "6".**
- **A/C control is not interrupted when starting On Board Diagnostic (OBD). It is however deactivated on selecting the following functions: "Output Diagnostic Test Mode (DTM) diagnosis" , "Basic setting procedure".**
- **Control function remains fully operational when other functions are selected.**
- **For install locations of air conditioner components, refer to --> A/C system control and regulation components.**

Safety precautions

Pay attention to the following if testers and measuring instruments have to be used in the course of a test drive:

CAUTION:

- **Always secure testers and measuring instruments to the back seat and have them operated from there by a second person.**
- **If testers and measuring instruments are operated from the front passengers seat, the person sitting there may suffer injury in the event of an accident due to triggering of the front passengers airbag.**

ON BOARD DIAGNOSTIC (OBD), PROCEDURE

Diagnostic Operation System VAS 5051A , connecting and selecting functions

Test requirements:

- Vehicle power supply OK
- Fuses OK

NOTE:

- **The various functions of the Diagnostic Operation System VAS 5051A are described in the system operating instructions.**
- **The design and function of the Diagnostic Operation System VAS 5051A are described in the 202 Diagnostic Operation System VAS 5051A. This also contains a range of examples illustrating correct system utilization.**
- **On this vehicle, the diagnostic connections of various control modules (e.g. radio) are wired to a different diagnostic connector pin. In order to exchange data with these control modules, the diagnostic cable between the vehicle and the vehicle diagnostic system (e.g. Diagnostic Operation System VAS 5051A or Vehicle Diagnosis Service Syst. VAS 5052) must be installed with a K-Lead Adapter Vas6017B VAS 6017B (or the K-Lead Adapter VAS 6017A) --> Automatic Climate Control System, On Board Diagnostic (OBD) and.**
- **For vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN), On Board Diagnostic (OBD) can also be performed using the Fault Read Out Device V.A.G 1551 or the Mobile Scan Tool V.A.G 1552 in mode "1" (rapid data transfer). The various functions are described in the relevant system operating instructions. For vehicles as of VIN "400000" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN), On Board Diagnostic (OBD) using the Fault Read Out Device V.A.G 1551 or the Mobile Scan Tool V.A.G 1552 will no longer be possible for all vehicle systems.**
- **In order to be able to perform On Board Diagnostic (OBD) with the Fault Read Out Device V.A.G 1551 or the Mobile Scan Tool V.A.G 1552 on this vehicle, the program card in the Fault Read Out Device V.A.G 1551 must correspond to at least data version "No. 9" and in the Mobile Scan Tool V.A.G 1552 to at least data version "No. 6".**

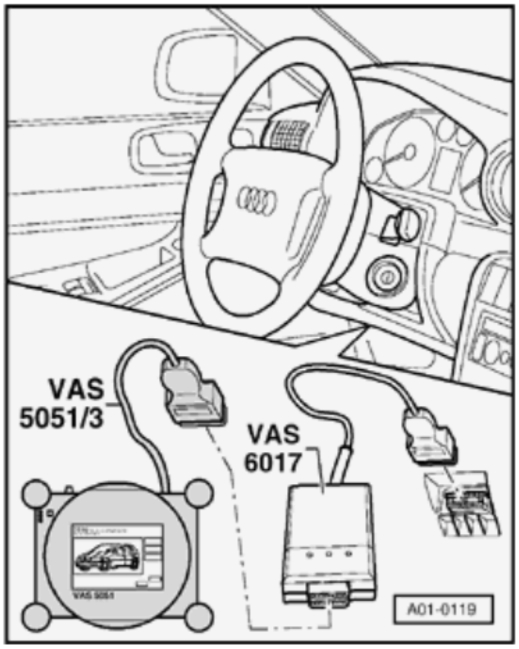

Fig. 1: Identifying Diagnostic Operation System VAS 5051/3 & VAS 6017
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With the ignition switched off, connect Diagnostic Operation System VAS 5051A using, for example, Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A) to the 16-pin diagnostic socket in the vehicle.
- Switch ignition on.

Or

- Start engine.

NOTE:

- **Pay attention to the applicable notes on Output Diagnostic Test Mode (DTM) diagnosis --> Output Diagnostic Test Mode (DTM) (function 03).**
- **If On Board Diagnostic (OBD) must be performed for several vehicle systems, use the K-Lead Adapter Vas6017B VAS 6017B (or the K-Lead Adapter VAS 6017A) if applicable.**
- **The LEDs on the K-lead adapter VAS 6017 light as soon as the transmits a request and as soon as the relevant vehicle control module responds or to indicate the channel (1 or 2) on which the information is output.**

- Set "Auto" mode on the operating and display module, Climatronic Control Module J255.
- Select "Vehicle On Board Diagnostic (OBD)" function on Diagnostic Operation System VAS 5051A.
- Select vehicle system "08 - Air conditioner/heater electronics".

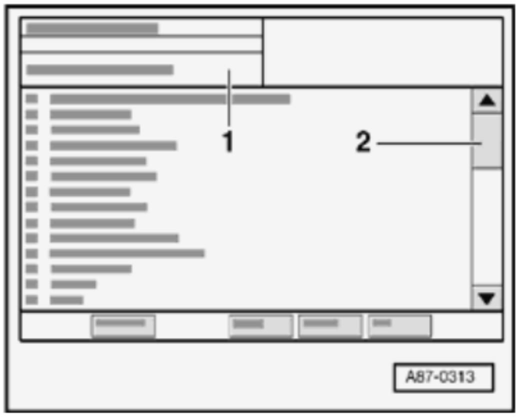

Fig. 2: Identifying Vehicle System Selection Prompt & "Scrolling" Bar
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Vehicle system selection prompt appears in display zone - 1 -.**
- **"Scrolling" the screen display with the bar - 2 - permits display of vehicle systems (for all vehicle models and equipment levels) which are intended for On Board Diagnostic (OBD) but are not currently visible on the screen.**

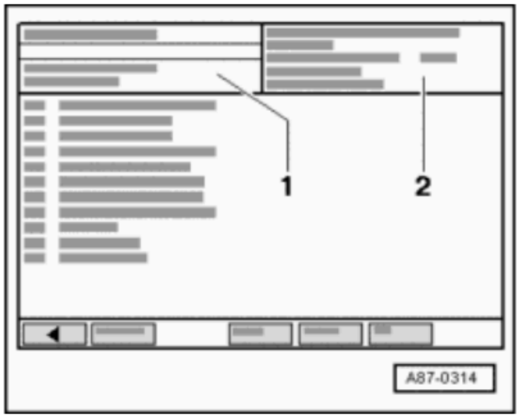

Fig. 3: Locating Control Module Identification With Code Indicated On Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wait until "Select diagnostic function" appears in zone - **1** - of Diagnostic Operation System VAS 5051A display.

NOTE:

- **Control module identification now appears in display zone - 2 - of Diagnostic Operation System VAS 5051A.**

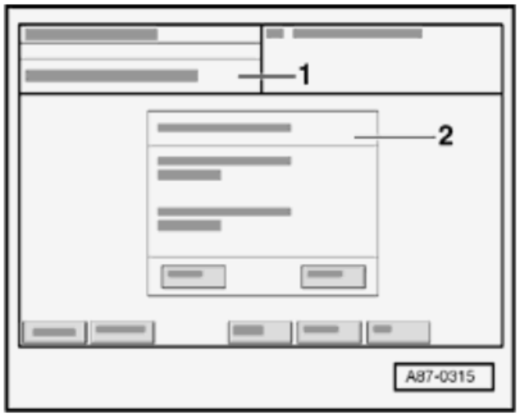

Fig. 4: Identifying "Vehicle System Not Available" & "Diagnostic Bus Interrupted" On Diagnostic Operation System VAS 5051A Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **Check the following if "Vehicle system not available" appears in zone - 1 - of Diagnostic Operation System VAS 5051A display:**
- **Voltage supply to operating and display module, Climatronic Control Module J255 using wiring diagram**
- **Wiring between 16-pin diagnostic socket and operating and display module, Climatronic Control Module J255**
- **Check the following if an additional display zone - 2 - with the message "Diagnostic Bus interrupted" and references to possible cause of trouble appears on Diagnostic Operation System VAS 5051A display:**
- **Voltage supply to 16-pin diagnostic socket using wiring diagram**
- **Voltage and condition of Battery A (vehicle Battery) "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052**
- **"Diagnostic Bus interrupted" display with references to possible cause of trouble also appears on Diagnostic Operation System VAS 5051A if a problem has occurred during On Board Diagnostic (OBD) or in the event of interruption of data exchange between the Diagnostic Operation System VAS 5051A and the operating and display module, Climatronic Control Module J255.**
- **The current screen display can be printed out by selecting the "Print" function on the Diagnostic Operation System VAS 5051A display.**
- **Possible causes of trouble can be displayed by selecting "Help" function on Diagnostic Operation System VAS 5051A display.**
- **Touching the buttons shown on the Diagnostic Operation System VAS 5051A display allows movement forwards or backwards in the program (arrow buttons), or to switch functions.**

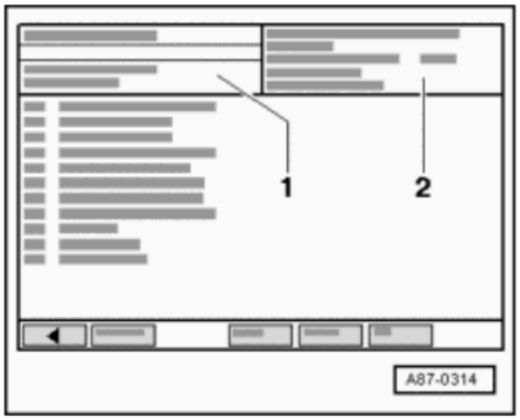

Fig. 5: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The desired function can now be started via the Diagnostic Operation System VAS 5051A display.

Control module identification (e.g. display field - 2 -)

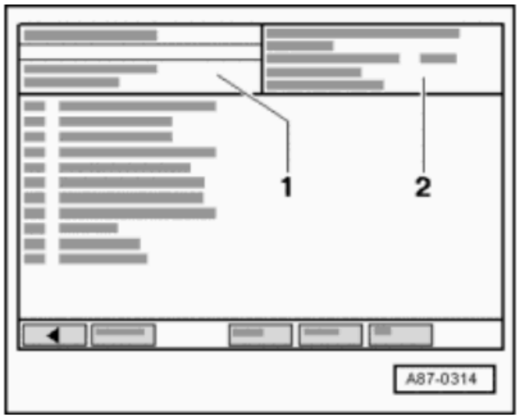

Fig. 6: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

• 08 - AC heating electronics	Selected vehicle system
• 8E0 820 043 X	Part No.; allocation
• A4 Automatic AC	Audi A4 A/C control module
• XXXX	Data version (hardware and software) of control module
• Code XXXXX:	Applies to vehicle-specific optional extras --> **Climatronic Control Module J255, coding (function 07)**
• WSC XXXXX:	Dealer identification number of dealer with which coding was last performed

NOTE:

- **As of April 2002, operating and display modules, Climatronic Control Module J255 with part number index "H" onwards (with software version as of "XX15") have gradually been installed. With these operating and display modules, Climatronic Control Module J255 the passenger compartment temperature regulation is designed somewhat cooler.**
- **Vehicles as of Model Year 2003 are only to be installed with operating and display modules, Climatronic Control Module J255 with part number index "H" onwards.**
- **Vehicles with 4-cyl. engine and gasoline direct injection (FSI) are only to be installed with operating and display modules, Climatronic Control Module J255 with part number index "H" onwards.**
- **Vehicles up to VIN "399999" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN) are not to be installed with operating and display modules, Climatronic Control Module J255 with part number index "AJ" onwards.**
- **Vehicles as of VIN "400000" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN) are only to be installed with operating and display modules, Climatronic Control Module J255 with part number index "AJ" onwards.**
- **The operating and display module, Climatronic Control Module J255 switches automatically to "ECON" mode if, following installation of a new operating and display module, Climatronic Control Module J255 , basic setting was not performed or if the pressure measured by the High Pressure Sensor G65 is too low or too high (the compressor must not be activated) --> Read Measuring Value Block (function 08). This status is displayed as being a malfunction as of hardware/software version "0711".**
- **If, after switching on the ignition, the operating and display module, Climatronic Control Module J255 switches automatically to "Off" mode and if it is only possible to set "Def" mode (no other settings possible) with the ignition switched on, check the assignment of the ignition key. If, for example, the ignition has been switched on using a key which has not been released for this vehicle or the Instrument Cluster Control Module J285 does not transmit a key number via the CAN-Bus comfort system (provided as of hardware/software version "0711"), functioning of the operating and display module, Climatronic Control Module J255 is restricted to these modes.**
- **As of hardware/software version "0711" , the operating and display module, Climatronic Control Module J255 saves the VIN transmitted via the CAN-Bus comfort system. If an operating and display module, Climatronic Control Module J255 which has already been installed is installed in a different vehicle, this is detected by the operating and display module, Climatronic Control Module J255 and the malfunction "Control module incorrect Vehicle Identification Number (VIN)" is stored. If**

this malfunction is displayed, the old VIN must be erased via the "Adaptation" function --> Climatronic Control Module J255, Adaptation (function 10).

- **With the Audi Cabrio, different settings are stored for closed and open convertible top in the operating and display module, Climatronic Control Module J255. On opening and closing the convertible top, the operating and display module, Climatronic Control Module J255 then automatically alters the setting to the value last set with convertible top closed or open.**

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, CHECKING (FUNCTION 02)

Diagnostic Trouble Code (DTC) Memory, checking (function 02)

NOTE:

- **The operating and display module, Climatronic Control Module J255 switches automatically to "ECON" mode if, following installation of a new operating and display module, Climatronic Control Module J255 , basic setting was not performed or if the pressure measured by the High Pressure Sensor G65 is too low or too high (the compressor must not be activated) --> Read Measuring Value Block (function 08). This status is displayed as being a malfunction as of hardware/software version "0711".**
- **If, after switching on the ignition, the operating and display module, Climatronic Control Module J255 switches automatically to "Off" mode and if it is only possible to set "Def" mode with the ignition switched on (no other settings possible), the ignition has been switched on for example using a key not released for the vehicle concerned or the Instrument Cluster Control Module J285 is not transmitting a key number via the CAN-Bus comfort system (provided as of hardware/software version "0711").**
- **If the operating and display module, Climatronic Control Module J255 displays a number, check the DTC memory of the operating and display module, Climatronic Control Module J255 (the number "60" for example indicates a fault at the Interior Temperature Sensor Fan V42). If the display of the operating and display module, Climatronic Control Module J255 flashes and No fault is displayed in the DTC memory (e.g. with display "09"), there is a malfunction in the electronics of the operating and display module, Climatronic Control Module J255.**

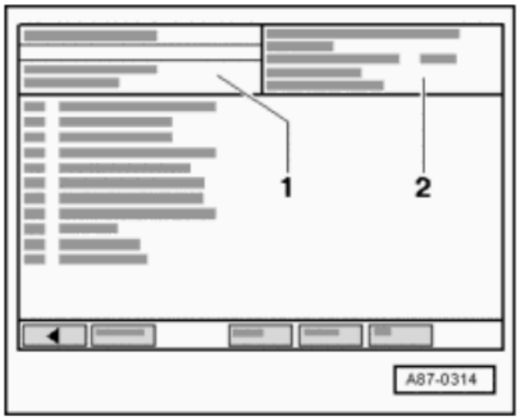

Fig. 7: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- With the ignition switched off, connect Diagnostic Operation System VAS 5051A for example using Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A) to the 16-pin diagnostic socket in the vehicle and use address word "08" to select A/C heater electronics --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.

Indicated on display of Diagnostic Operation System VAS 5051A :

- Select function "02 - checking DTC memory".

Indicated on display of Diagnostic Operation System VAS 5051A :

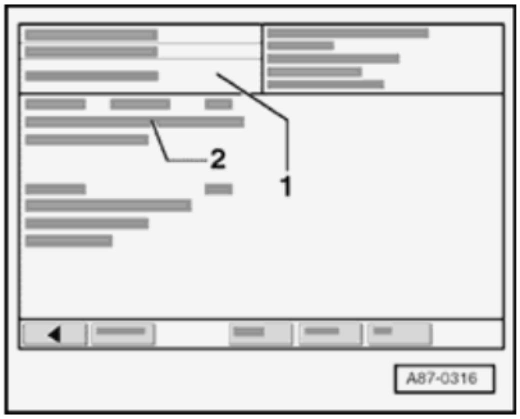

Fig. 8: Identifying Content Of DTC Memory & Identification Of Fault On Diagnostic System VAS 5051 Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Number of stored faults appears in display zone - **1** -.
- DTC code, fault location and type of DTC memory appear in display zone - **2** -.

NOTE: **Touch <-- key to return to selection program.**

- **If no malfunction has been detected and there are problems with the air conditioner (e.g. constant or intermittent failure of cooling output, unsatisfactory system control, no regulation of fresh-air blower speed, operating and display module, Climatronic Control Module J255 always switches to "ECON" or "Off" mode):**
- **1. Read measuring value block (function 08) --> Read Measuring Value Block (function 08).**
- **2. Perform Output Diagnostic Test Mode (DTM) diagnosis (function 03) --> Output Diagnostic Test Mode (DTM) (function 03).**
- **3. Check cooling output of air conditioner --> A/C refrigerant system, testing.**
- **If malfunction(s) are found:**
- **1. Rectify fault.**
- **2. Check DTC memory (function 02).**
- **3. Erase DTC memory (function 05).**
- **4. Check coding of operating and display module, Climatronic Control Module J255 or Instrument Cluster Control Module J285 --> Climatronic Control Module J255, coding (function 07).**
- **5. Perform basic setting (function 04).**
- **6. Check DTC memory (function 02) and if necessary eliminate DTCs displayed, erase DTC memory (function 05) and repeat procedure.**
- **7. End output (function 06).**

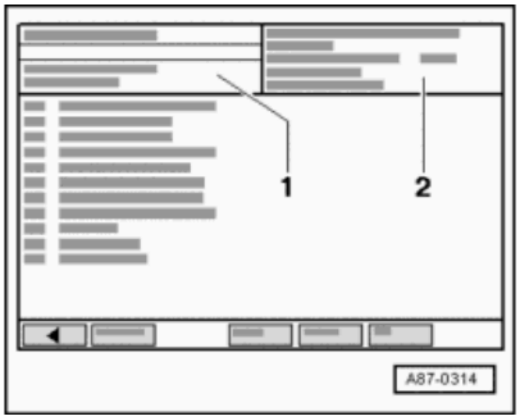

Fig. 9: Locating Control Module Identification With Code Indicated On Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- End output (function 06) --> **End Output (function 06)**.

- Switch off ignition and disconnect diagnostic connector.

Diagnostic Trouble Code (DTC) table

NOTE:

- **Listed in the following in ascending order of DTC codes are all DTCs which are detected by the operating and display module, Climatronic Control Module J255 and displayed on the Diagnostic Operation System VAS 5051A on checking the content of the DTC memory.**
- **The content of the DTC memory is retained until the memory is erased --> Diagnostic Trouble Code (DTC) Memory, erasing (function 05).**
- **Sporadic faults are marked "/SP" on the display.**
- **In the case of sporadic faults, always pay particular attention to the possibility of loose contacts in the connectors.**
- **If defective components are displayed on reading out the DTC memory, use the wiring diagram to additionally check for short circuit and open circuit in the wiring to the components.**
- **Check the appropriate plug contacts before replacing a component.**
- **Before replacing the operating and display module, Climatronic Control Module J255 , additionally check the power supply and Ground (GND) connections.**
- **With the Audi Cabrio, different settings are stored for closed and open convertible top in the operating and display module, Climatronic Control Module J255. On opening and closing the convertible top, the operating and display module, Climatronic Control Module J255 then automatically alters the setting to the value last set with convertible top closed or open.**
- **Always perform basic setting (function "04") after replacing an air conditioner component. Then read out the DTC memory, eliminate any faults displayed and erase the DTC memory (functions "02" and "05").**
- **The display of the operating and display module, Climatronic Control Module J255 is switched from °C (centigrade) to °F (Fahrenheit) and vice versa by pressing the "Temperature + left" button with the "recirculated-air button" pressed --> Climatronic Control Module J255 , removing and installing.**
- **Checking cooling output of air conditioner --> A/C refrigerant system, testing**
- **If the compressor output has been reduced 30 times during a driving cycle because of incorrect pressure in the refrigerant circuit, e.g. due to a loose contact (in the wiring to the High Pressure Sensor G65), the A/C Compressor Regulator Valve N280 is no longer activated and the compressor is thus shut off. The compressor can be re-activated by pressing the "Auto" button or by switching the ignition off and on again.**
- **If a malfunction is detected at the potentiometer in one of the air distribution control motors, the air distribution can be influenced by**

pressing the buttons on the operating and display module, Climatronic Control Module J255.

- **If temperature regulation is found not to be working properly but no DTC is displayed:**
- **Check proper installation of temperature sensors.**
- **Check for interchanged wiring to Sunlight Photo Sensor G107 and that the correct version of the Sunlight Photo Sensor G107 has been installed (different versions for vehicles up to and as of VIN 400000 in Model Year 2005 for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN) .**
- **Check operation of Interior Temperature Sensor Fan V42 (installed in operating and display module, Climatronic Control Module J255).**
- **Check activation of the two temperature flaps via the corresponding control motor.**
- **A message is no longer displayed for certain types of malfunctions if the DTC memory is checked using the Fault Read Out Device V.A.G 1551 or Mobile Scan Tool V.A.G 1552 (DTC code is no longer incorporated into program card for these Fault Readout Devices).**
- **On vehicles with 8-cyl. engine, the compressor is not driven via a belt, but rather by way of a shaft --> Vehicles with 8 cyl. engine (compressor drive via a shaft).**

DTC table up to DTC code "00975"

Display on Diagnostic Operation System VAS 5051A and print output	Possible cause	Corrective action
65535 No malfunction recognized	If no malfunction is detected despite problems with the air conditioner/heater electronics, perform functions "03" (Output Diagnostic Test Mode (DTM) diagnosis) and "08" (reading measuring value block) and check coding of operating and display module, Climatronic Control Module J255 or Instrument Cluster Control Module J285 --> **Climatronic Control Module J255, coding (function 07)**	

NOTE:

- **For this vehicle, the basic setting (e.g. country version, left-hand drive or right-hand drive) is coded in the Instrument Cluster Control Module J285 and transmitted via the "CAN-Bus comfort system" to the connected vehicle systems. The currently valid code is displayed in the measuring value block --> Read Measuring Value Block (function 08). The direct entry**

of a code in the operating and display module, Climatronic Control Module J255 is only provided for certain items of equipment (e.g. Heated Windshield Z2 , vehicle model: Saloon, Avant or Cabrio and sunroof with solar cells) --> Climatronic Control Module J255, coding (function 07) , "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
00457 Vehicle Electrical System Control Module J519			
	- Check DTC memory	- The Vehicle Electrical System Control Module J519 cannot output the required data because of a malfunction and sets a malfunction. - The Vehicle Electrical System Control Module J519 cannot output the required data because of a malfunction in an upstream component and sets a malfunction.	○ Check DTC memory of Vehicle Electrical System Control Module J519 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Determine and eliminate the causes of all DTCs in the DTC memory of the Vehicle Electrical System Control Module J519.
	- No communication (time out)/SP	- Open circuit in both signal wires (CAN-Bus	○ Use wiring diagram to locate and eliminate

		system) between Vehicle Electrical System Control Module J519 and operating and display module, Climatronic Control Module J255	open circuit or loose contact at both signal wires (CAN-Bus system) between Vehicle Electrical System Control Module J519 and operating and display module, Climatronic Control Module J255 ○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.
Continued in next			

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00457 (continued)			
	- No communication (time out)/SP	- Malfunction affecting data output in Vehicle Electrical System Control Module J519 or in a component connected to it.	○ Check DTC memory of Vehicle Electrical System Control Module J519 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B

			or Vehicle Diagnosis Service Syst. VAS5052
		• No data transmitted by Vehicle Electrical System Control Module J519. • The operating and display module, Climatronic Control Module J255 cannot read the data transmitted by the Vehicle Electrical System Control Module J519.	○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.
		• Interruption of voltage to Vehicle Electrical System Control Module J519 with ignition switched on.	○ Check and erase DTC memories of all control units connected to CAN-Bus comfort system "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B

			or Vehicle Diagnosis Service Syst. VAS5052

NOTE:

- **Reception of the information is displayed in the measuring value block (display group "125").**

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
00466 Steering Column Electronic Systems Control Module J527			
	• Check DTC memory	• The Steering Column Electronic Systems Control Module J527 cannot output the required data because of a malfunction and sets a malfunction. • The Steering Column Electronic Systems Control Module J527 cannot output the required data because of a malfunction in an upstream component and sets a malfunction.	○ Check DTC memory of Steering Column Electronic Systems Control Module J527 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Determine and eliminate the causes of all DTCs in the DTC memory of the Steering Column Electronic Systems Control Module

			J527.
	- No communication/SP	- Interruption of voltage to Steering Column Electronic Systems Control Module J527 with ignition switched on.	○ Eliminate cause of trouble and check and erase DTC memories of all control units connected to CAN-Bus comfort system "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00466 (continued)			
	- No communication/SP	- Malfunction affecting data output in Steering Column Electronic Systems Control Module J527 or in a component connected to it.	○ Check DTC memory of Steering Column Electronic Systems Control Module J527 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B

			or Vehicle Diagnosis Service Syst. VAS5052
		- No data transmitted by Steering Column Electronic Systems Control Module J527. - The operating and display module, Climatronic Control Module J255 cannot read the data transmitted by the Steering Column Electronic Systems Control Module J527.	○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.
		- Open circuit in both signal wires (CAN-Bus system) between Steering Column Electronic Systems Control Module J527 and operating and display	○ Use wiring diagram to locate and eliminate open circuit or loose contact at both signal wires (CAN-Bus system) between Steering Column Electronic Systems

		module, Climatronic Control Module J255	Control Module J527 and operating and display module, Climatronic Control Module J255 ○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.

NOTE:
- **Reception of the information is displayed in the measuring value block (display group "125").**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00474 Anti-Theft Immobilizer Control Module J334			
	• No communication (time out)/SP	• Immobilizer Adaptation not performed as specified and in full. • Starting implemented using a key not released for this vehicle (e.g. by way of emergency starting function).	○ Check DTC memory of Instrument Cluster Control Module J285 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Switch on ignition with a released ignition key,

			adapt ignition key used and check and erase DTC memory of operating and display module, Climatronic Control Module J255 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
		• Malfunction affecting data output in Instrument Cluster Control Module J285 or in a component connected to it	○ Check DTC memory of Instrument Cluster Control Module J285 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
		• No data transmitted by Instrument	○ Check CAN-Bus comfort system --> **CAN-Bus**

		Cluster Control Module J285. • The operating and display module, Climatronic Control Module J255 cannot read the data transmitted by the Instrument Cluster Control Module J285.	**comfort system, checking**.

NOTE:

- **The Anti-Theft Immobilizer Control Module J334 is installed in the Instrument Cluster Control Module J285.**
- **The malfunction (Anti-Theft Immobilizer Control Module J334) is only detected by an operating and display module, Climatronic Control Module J255 with hardware/software as of version "0711". This function was incorporated as part of enhancement of the anti-theft protection system.**
- **If the ignition is switched on using a key not released for this vehicle, the operating and display module, Climatronic Control Module J255 switches automatically to "Off" mode after switching on the ignition and can only be switched to "Def" mode with the ignition switched on (no other settings possible).**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00532 Voltage supply			
	• Signal too small/SP	• Voltage dips in vehicle electrical system to values below 9.5 V	○ Check Generator (GEN) C and Voltage Regulator (VR) C1
	• Signal too large/SP	• Voltage in vehicle	○ Check Generator

		electrical system has exceeded 15 V	(GEN) C and Voltage Regulator (VR) C1

NOTE:

- **If the electrical system voltage (at connector "C" , contact "13") drops to a value below 9.5 V, the heating of e.g. the Heated Rear Window Z1 , Drivers Seat Heating Element Z6 and Front Passengers Seat Heating Element Z8 is deactivated.**
- **The malfunction "Signal too large" may also be displayed for example if an unsuitable charging unit is used for charging the Battery A.**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00601 Central Flap Motor Position Sensor G112 in Central Air Flap Motor V70			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit, open circuit in wiring or wiring malfunction between Central Flap Motor Position Sensor G112 and operating and display module, Climatronic Control Module J255 • Central Flap Motor Position Sensor G112 in Central Air Flap Motor V70 defective	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction. ○ Replace Central Air Flap Motor V70.
	• Adaptation limit exceeded	• Central flap stiff • Central Flap	○ Check freedom of movement of central flap

		Motor Position Sensor G112 in Central Air Flap Motor V70 defective	○ Replace Central Air Flap Motor V70

NOTE:

- **The DTC "Adaptation limit exceeded" is only detected during basic setting. If this malfunction occurs, a substitute value is stored as adaptation value (adaptation value for this potentiometer) and displayed in the corresponding measuring value block.**
- **If the DTC "Adaptation limit exceeded" is displayed, check whether flap reaches both end stops and that there is no excessive play in the operating levers (wear).**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00604 Back Pressure Flap Motor Position Sensor G113 in Air Flow Flap Motor V71			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit, open circuit in wiring or wiring malfunction between Back Pressure Flap Motor Position Sensor G113 and operating and display module, Climatronic Control Module J255 • Back Pressure Flap Motor Position Sensor G113 in Air Flow Flap Motor	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction ○ Replace Air Flow Flap Motor V71

		V71 defective	
		• Operating and display unit, Climatronic Control Module J255 incorrectly coded.	○ Read measuring value block (display group "019") and check coding of operating and display module, Climatronic Control Module J255 --> **Read Measuring Value Block (function 08)**
	• Adaptation limit exceeded	• Fresh-air/air flow flaps stiff • Back Pressure Flap Motor Position Sensor G113 in Air Flow Flap Motor V71 defective	○ Check freedom of movement of fresh-air/air flow flaps ○ Replace Air Flow Flap Motor V71
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00604 (continued)			
	• Open circuit/short to positive/SP	• Comfort System Central Control Module J393 incorrectly coded.	○ Check coding transmitted to operating and display module, Climatronic Control

			Module J255 --> **Read Measuring Value Block (function 08)**. ○ Check coding of Comfort System Central Control Module J393 and code as specified if necessary "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

NOTE:

- **This control motor is used to activate the air flow/fresh-air flap.**
- **The DTC "Adaptation limit exceeded" is only detected during basic setting. If this malfunction occurs, a substitute value is stored as adaptation value (adaptation value for this potentiometer) and displayed in the corresponding measuring value block.**
- **If the malfunction "Adaptation limit exceeded" is displayed, check whether the flaps reach both end stops and that there is no excessive play in the operating levers (wear).**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00710 Defroster Flap Motor V107			
	• Blocked or no voltage/SP	• Short circuit, open circuit in wiring or wiring	○ Use wiring diagram to locate and eliminate

		malfunction between Defroster Flap Motor V107 and operating and display module, Climatronic Control Module J255	short circuit, open circuit in wiring or wiring malfunction
		• Defroster flap stiff	○ Check freedom of movement of defroster flap
		• Defroster Flap Motor V107 defective	○ Check Defroster Flap Motor V107 --> **Output Diagnostic Test Mode (DTM) (function 03)**

NOTE:

- **In the case of an operating and display module, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction "Short to Ground (GND)" or "Open circuit/short to positive" may also be displayed for this control motor. The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Blocked or no voltage".**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00716 Recirculation Flap Motor V113			
	• Blocked or no voltage/SP	• Short circuit, open circuit in wiring or wiring malfunction between Recirculation Flap Motor V113 and	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction

		operating and display module, Climatronic Control Module J255	
		- Recirculated-air flap stiff (left-hand drive vehicles)	○ Check freedom of movement of recirculated-air flap
		- Fresh-air flaps or recirculated-air flap stiff (right-hand drive vehicles)	○ Check freedom of movement of fresh-air flaps and recirculated-air flap
		- Recirculation Flap Motor V113 defective	○ Check Recirculation Flap Motor V113 --> **Output Diagnostic Test Mode (DTM) (function 03)**
		- Operating and display unit, Climatronic Control Module J255 incorrectly coded.	○ Read measuring value block (display group "019"), check coding of operating and display module, Climatronic Control Module J255 and code transmitted to operating and display module,

			Climatronic Control Module J255 --> **Read Measuring Value Block (function 08)**
		• Comfort System Central Control Module J393 incorrectly coded.	○ Check coding of Comfort System Central Control Module J393 and code as specified if necessary "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

NOTE:

- **The Recirculation Flap Motor V113 only moves the recirculated-air flap. The air flow/fresh-air flaps are moved by the Air Flow Flap Motor V71.**
- **In the case of operating and display modules, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction "Short to Ground (GND)" or "Open circuit/short to positive" may also be displayed for this control motor. The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Blocked or no voltage".**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00727 Defroster Flap Motor Position Sensor G135 in Defroster Flap Motor V107			
	• Short to Ground (GND)/SP	• Short circuit,	○ Use wiring

	- Open circuit/short to positive/SP	open circuit in wiring or wiring malfunction between Defroster Flap Motor Position Sensor G135 and operating and display module, Climatronic Control Module J255 - Defroster Flap Motor Position Sensor G135 in Defroster Flap Motor V107 defective	diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction ○ Replace Defroster Flap Motor V107
	- Adaptation limit exceeded	- Defroster flap stiff - Defroster Flap Motor Position Sensor G135 in Defroster Flap Motor V107 defective	○ Check freedom of movement of defroster flap ○ Replace Defroster Flap Motor V107

NOTE:

- **The DTC "Adaptation limit exceeded" is only detected during basic setting. If this malfunction occurs, a substitute value is stored as adaptation value (adaptation value for this potentiometer) and displayed in the corresponding measuring value block.**
- **If the malfunction "Adaptation limit exceeded" is displayed, check whether flap reaches both end stops and that there is no excessive play in the operating levers (wear).**

Display on Diagnostic Operation System VAS 5051A and print output	Possible cause	Corrective action

00735 Recirculation Flap Motor Position Sensor G143 in Recirculation Flap Motor V113			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit, open circuit in wiring or wiring malfunction between Recirculation Flap Motor Position Sensor G143 and operating and display module, Climatronic Control Module J255	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction
		• Recirculation Flap Motor Position Sensor G143 in Recirculation Flap Motor V113 defective	○ Replace Recirculation Flap Motor V113
	• Adaptation limit exceeded	• Recirculated-air flap stiff (left-hand drive vehicles)	○ Check freedom of movement of recirculated-air flap.
		• Recirculation Flap Motor Position Sensor G143 in Recirculation Flap Motor V113 defective	○ Replace Recirculation Flap Motor V113

NOTE:

- **The DTC "Adaptation limit exceeded" is only detected during basic setting.**

If this malfunction occurs, a substitute value is stored as adaptation value (adaptation value for this potentiometer) and displayed in the corresponding measuring value block.

- **If the malfunction "Adaptation limit exceeded" is displayed, check whether flap reaches both end stops and that there is no excessive play in the operating levers (wear).**
- **The Recirculation Flap Motor V113 only moves the recirculated-air flap. The air flow/fresh-air flaps are moved by the Air Flow Flap Motor V71.**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00756 Left Vent Temperature Sensor G150			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit or open circuit in wiring between Left Vent Temperature Sensor G150 and operating and display module, Climatronic Control Module J255 • Left Vent Temperature Sensor G150 defective	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring. ○ Check Left Vent Temperature Sensor G150 --> **Automatic Climate Control System, electrical testing**.
00757 Right Vent Temperature Sensor G151			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit or open circuit in wiring between Right Vent Temperature Sensor G151 and operating and display module, Climatronic	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring. ○ Check Right Vent Temperature Sensor G151 -->

		Control Module J255 • Right Vent Temperature Sensor G151 defective	**Automatic Climate Control System, electrical testing**.

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00785 Instrument Panel Interior Temperature Sensor G56			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Instrument Panel Interior Temperature Sensor G56 defective	○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**

NOTE:

- **The Instrument Panel Interior Temperature Sensor G56 is installed in the operating and display module, Climatronic Control Module J255. The Instrument Panel Interior Temperature Sensor G56 cannot be checked and replaced separately. In the event of a malfunction, the entire operating and display module, Climatronic Control Module J255 must be replaced.**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00787 Fresh Air Intake Duct Temperature Sensor G89			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit or open circuit in wiring between Fresh Air Intake Duct Temperature Sensor G89	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring ○ Check Fresh

		and operating and display module, Climatronic Control Module J255 • Fresh Air Intake Duct Temperature Sensor G89 defective	Air Intake Duct Temperature Sensor G89 --> **Automatic Climate Control System, electrical testing**
00796 Interior Temperature Sensor Fan V42 (instrument panel)			
	• RPM deviation too great	• Interior Temperature Sensor Fan V42	○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**

NOTE:

- **The Interior Temperature Sensor Fan V42 is installed in the operating and display module, Climatronic Control Module J255. The Interior Temperature Sensor Fan V42 cannot be checked and replaced separately. In the event of a malfunction, the entire operating and display module, Climatronic Control Module J255 must be replaced.**
- **The RPM measured by the operating and display module, Climatronic Control Module J255 for the Interior Temperature Sensor Fan V42 is displayed in the measuring value block (display group "011") --> Read Measuring Value Block (function 08).**
- **In the case of an operating and display module, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction displayed for the Interior Temperature Sensor Fan V42 may also be "Blocked or no voltage" or "Signal outside tolerance". The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "RPM deviation too great".**

- **In the event of a malfunction at the Interior Temperature Sensor Fan V42 , a temperature greater than 30 °C may be indicated or set on the display of the operating and display module, Climatronic Control Module J255. At the same time, the operating and display module, Climatronic Control Module J255 switches to outlet air flow control, as the temperature in the passenger compartment can no longer be measured.**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00797 Sunlight Photo Sensor G107			
	• Short to positive/SP • Open circuit/short to Ground (GND)/SP	• Short circuit or open circuit in wiring between Sunlight Photo Sensor G107 and operating and display module, Climatronic Control Module J255 • Sunlight Photo Sensor G107 defective	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring ○ Check Sunlight Photo Sensor G107 (reading measuring value block, display group "016") --> **Read Measuring Value Block (function 08)**

NOTE:

- **The Sunlight Photo Sensor G107 has two phototransistors (one each for drivers and front passengers side).**
- **There are different versions of the operating and display module, Climatronic Control Module J255 and the Sunlight Photo Sensor G107. Attention must therefore be paid to the exact assignment when replacing an operating and display module .**
- **As of VIN 400000 in Model Year 2005 (for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), vehicles are to be installed with a modified Sunlight Photo Sensor G107 and a modified operating and display module, Climatronic Control Module J255. Operating and display units, Climatronic Control**

Module J255 with part No. index up to "AH" are only to be installed with the Sunlight Photo Sensor G107 with part No. 8E0 907 539. Operating and display units, Climatronic Control Module J255 with part No. index "AJ" onwards are only to be installed with the Sunlight Photo Sensor G107 with part No. 8P0 907 539 .

- **In the event of incorrect assignment between the Sunlight Photo Sensor G107 and the operating and display module, Climatronic Control Module J255 , the operating and display module, Climatronic Control Module J255 cannot evaluate the signal from the Sunlight Photo Sensor G107 and there will be problems with air conditioner control (reading measuring value block, display group "016") --> Read Measuring Value Block (function 08).**

Display on Diagnostic Operation System VAS 5051A and print output	**Possible cause**	**Corrective action**
00818 Evaporator Vent Temperature Sensor G263		
• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit or open circuit in wiring between Evaporator Vent Temperature Sensor G263 and operating and display module, Climatronic Control Module J255 • Evaporator Vent Temperature Sensor G263 defective	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring ○ Check Evaporator Vent Temperature Sensor G263 --> **Automatic Climate Control System, electrical testing**

NOTE:

- **If a malfunction is detected at the Evaporator Vent Temperature Sensor G263 , the operating and display module, Climatronic Control Module J255 switches to emergency operation and the A/C Compressor Regulator Valve N280 is then only activated with a maximum control current of at present approx. 0.3 A to 0.5 A. This reduces the cooling output of the air conditioner and adequate cooling is no longer achieved at higher temperatures (reading measuring value block, display groups "001" and "002") --> Read Measuring Value Block (function 08).**

Display on Diagnostic Operation System VAS 5051A and print output	Possible cause	Corrective action
00819 High Pressure Sensor G65		
• Short to Ground (GND)/SP ○ Duty cycle 5% or lower • Open circuit/short to positive/SP ○ Duty cycle 95% or higher	• Short circuit or open circuit in wiring between High Pressure Sensor G65 and operating and display module, Climatronic Control Module J255 • High Pressure Sensor G65 defective	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring ○ Check High Pressure Sensor G65 --> **Automatic Climate Control System, electrical testing**
• Signal too small/SP ○ Duty cycle less than 12% and greater than 5%	• Open circuit in power supply or Ground (GND) connection to High Pressure Sensor G65	○ Use wiring diagram to locate and eliminate open circuit
	• High Pressure Sensor G65 defective	○ Check High Pressure Sensor G65 --> --> **Automatic Climate Control System, electrical testing**
	• Not enough refrigerant in refrigerant circuit	○ Check pressure in refrigerant circuit --> **87 - AIR CONDITIONING**
Continued in next table		

Display on Diagnostic Operation System VAS 5051A	Possible cause	Corrective action

and print output			
00819 (continued)			
	• Signal too large/SP ○ Duty cycle greater than 92% and less than 95%	• High Pressure Sensor G65 defective	○ Check High Pressure Sensor G65 --> **Automatic Climate Control System, electrical testing**
		• Malfunction in activation of Coolant Fan V7	○ Check activation of Coolant Fan V7 --> **Output Diagnostic Test Mode (DTM) (function 03)**
		• Too much refrigerant in refrigerant circuit	○ Check pressure in refrigerant circuit --> **87 - AIR CONDITIONING**

NOTE:

- **The duty cycle transmitted by the High Pressure Sensor G65 is displayed in the measuring value block (display group "001") --> Read Measuring Value Block (function 08)**
- **The ambient conditions under which the pressure in the refrigerant circuit was last not OK are displayed in the measuring value block (display groups "026" and "027") --> Read Measuring Value Block (function 08)**
- **The operating and display module, Climatronic Control Module J255 switches automatically to "ECON" mode if the pressure measured by the High Pressure Sensor G65 is too low or too high (the compressor must not be switched on) --> Read Measuring Value Block (function 08).**

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
00825 Drivers Seat Heating Element Z6			
	• Output does not switch/short to positive/SP	• Short circuit or open circuit in Drivers Seat Heating Element Z6 in Ground (GND) connection to Drivers Seat	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring ○ Check

		Heating Element Z6 or in connection between Drivers Seat Heating Element Z6 and operating and display module, Climatronic Control Module J255 • Open circuit in Ground (GND) connection of Drivers Seat Heating Element Z6 • Drivers Seat Heating Element Z6 defective	activation and resistance values of Drivers Seat Heating Element Z6 -> **Heated seats, testing**
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
00825 (continued)			
	• Output does not switch/short to Ground (GND)/SP	• Short (to Ground (GND)) between Drivers Seat Heating Element Z6 and operating and display module, Climatronic Control Module J255	○ Use wiring diagram to locate and eliminate short circuit ○ Use wiring diagram to locate and eliminate open circuit ○ Check activation and

		- Open circuit in power supply to connector "F" at operating and display module, Climatronic Control Module J255 - Drivers Seat Heating Element Z6 defective	resistance values of Drivers Seat Heating Element Z6 --> **Heated seats, testing**

NOTE:

- **In the case of an operating and display module, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction displayed for the Drivers Seat Heating Element Z6 may also be "Open circuit". The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Output does not switch/short to positive".**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00826 Front Passengers Seat Heating Element Z8			
	- Output does not switch/short to positive/SP	- Short circuit or open circuit in Front Passengers Seat Heating Element Z8 in Ground (GND) connection to Front Passengers Seat Heating Element Z8 or in connection between Front	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring ○ Check activation and resistance values of Front Passengers Seat Heating Element Z8 --> **Heated**

		Passengers Seat Heating Element Z8 and operating and display module, Climatronic Control Module J255 • Open circuit in Ground (GND) connection of Front Passengers Seat Heating Element Z8 • Front Passengers Seat Heating Element Z8 defective	**seats, testing**
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
00826 (continued)			
	• Output does not switch/short to Ground (GND)/SP	• Short (to Ground (GND)) between Front Passengers Seat Heating Element Z8 and operating and display module, Climatronic Control Module J255 • Open circuit in power	○ Use wiring diagram to locate and eliminate short circuit ○ Use wiring diagram to locate and eliminate open circuit ○ Check activation and resistance values of Front

		supply to connector "F" at operating and display module, Climatronic Control Module J255 • Front Passengers Seat Heating Element Z8 defective	Passengers Seat Heating Element Z8 -> **Heated seats, testing**

NOTE:

- **In the case of an operating and display module, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction displayed for the Front Passengers Seat Heating Element Z8 may also be "Open circuit". The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Output does not switch/short to positive".**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00830 Convertible Top Control Module J256			
	• No communication/SP	• Operating and display unit, Climatronic Control Module J255 not coded as specified (operating and display module, Climatronic Control Module J255 in Saloon or Avant coded for Cabrio).	○ Check coding of operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255, coding (function 07)** (coding for specific equipment).
		• Malfunction affecting	○ Check DTC memory of

		data output in Convertible Top Control Module J256 or in a component connected to it.	Convertible Top Control Module J256 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
		• No data transmitted by Convertible Top Control Module J256. • The operating and display module, Climatronic Control Module J255 cannot read the data transmitted by the Convertible Top Control Module J256.	○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.
		• Interruption of voltage to Convertible Top Control Module J256 with ignition switched on.	○ check and erase DTC memories of all control units connected to CAN-Bus comfort system

			"Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00830 (continued)			
	- No communication/SP	- Open circuit in both signal wires (CAN-Bus system) between Convertible Top Control Module J256 and operating and display module, Climatronic Control Module J255	○ Use wiring diagram to locate and eliminate open circuit or loose contact at both signal wires (CAN-Bus system) between Convertible Top Control Module J256 and operating and display module, Climatronic Control Module J255 ○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.

	• Check DTC memory	• The Convertible Top Control Module J256 cannot output the required data because of a malfunction and sets a malfunction. • The Convertible Top Control Module J256 cannot output the required data because of a malfunction in an upstream component and sets a malfunction.	○ Check DTC memory of Convertible Top Control Module J256 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Determine and eliminate the causes of all DTCs in the DTC memory of the Convertible Top Control Module J256.

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00975 Heated Rear Window Z1			
Vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)			
	• Output does not switch/short to positive/SP	• Short circuit or open circuit in Heated Rear Window Z1 in Ground (GND) connection to Heated Rear Window Z1 or in	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring ○ Use wiring diagram to

		connection between Heated Rear Window Z1 and operating and display module, Climatronic Control Module J255 - Open circuit in power supply to connector "F" at operating and display module, Climatronic Control Module J255 - Heated Rear Window Z1 defective	locate and eliminate open circuit ○ Check activation and resistance values of Heated Rear Window Z1 --> **Heated Rear Window Z1 , testing**
	- Output does not switch/short to Ground (GND)/SP	- Short (to Ground (GND)) between Heated Rear Window Z1 and operating and display module, Climatronic Control Module J255 - Open circuit in power supply to connector "F" at operating and display	○ Use wiring diagram to locate and eliminate short circuit ○ Use wiring diagram to locate and eliminate open circuit ○ Check activation and resistance values of Heated Rear Window Z1 --> **Heated Rear**

		module, Climatronic Control Module J255 - Heated Rear Window Z1 defective	**Window Z1 , testing**

NOTE:

- **On vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 is activated directly by the operating and display module, Climatronic Control Module J255 (the relay for switching the current is installed in the operating and display module, Climatronic Control Module J255).**
- **On vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 will no longer be activated directly by the operating and display module, Climatronic Control Module J255 (operating and display modules, Climatronic Control Module J255 with part No. index "AJ" onwards are no longer installed with a relay). On these vehicles, the Heated Rear Window Z1 is activated via the Rear Window Defogger Relay J9.**
- **In the case of operating and display modules, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction displayed for the Heated Rear Window Z1 may also be "Open circuit". The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Output does not switch/short to positive".**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
00975 Heated Rear Window Z1			
Vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)			
	- Output does not switch/short to positive/SP	- Short circuit or open circuit in Rear Window Defogger Relay J9 in Ground (GND) connection to	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring ○ Use wiring

		Rear Window Defogger Relay J9 or in connection between Rear Window Defogger Relay J9 and operating and display module, Climatronic Control Module J255 • Open circuit in power supply to connector "F" at operating and display module, Climatronic Control Module J255 • Rear Window Defogger Relay J9 defective	diagram to locate and eliminate open circuit ○ Check activation and resistance values of Rear Window Defogger Relay J9 --> **Heated Rear Window Z1 , testing**
	• Output does not switch/short to Ground (GND)/SP	• Short (to Ground (GND)) between Rear Window Defogger Relay J9 and operating and display module, Climatronic Control Module J255	○ Use wiring diagram to locate and eliminate short circuit ○ Use wiring diagram to locate and eliminate open circuit ○ Check activation

		- Open circuit in power supply to connector "F" at operating and display module, Climatronic Control Module J255 - Rear Window Defogger Relay J9 defective	and resistance values of Rear Window Defogger Relay J9 --> **Heated Rear Window Z1 , testing**

NOTE:

- **On vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 is activated directly by the operating and display module, Climatronic Control Module J255 (the relay for switching the current is installed in the operating and display module, Climatronic Control Module J255).**
- **On vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 will no longer be activated directly by the operating and display module, Climatronic Control Module J255 (operating and display modules, Climatronic Control Module J255 with part No. index "AJ" onwards are no longer installed with a relay). On these vehicles, the Heated Rear Window Z1 is activated via the Rear Window Defogger Relay J9.**

DTC table from DTC code "01044"

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
01044 Control module incorrectly coded			
		- Instrument Cluster Control Module J285 not coded in specified manner	○ Check coding transmitted to operating and display module, Climatronic

		• Malfunction on CAN-Bus comfort system • Operating and display unit, Climatronic Control Module J255 not coded according to specifications.	Control Module J255 (Reading measuring value block, display group "019") --> **Read Measuring Value Block (function 08)** ○ Check coding of Instrument Cluster Control Module J285 and code as specified if necessary Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ check DTC memories of all control units connected to CAN-Bus comfort system and locate and eliminate the CAN-Bus system faults displayed "Guided Fault-Finding"

			Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Check coding of operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255, coding (function 07)** (coding for specific equipment).

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
01087 Basic setting not performed			
		- During the "Basic setting" function a fault has occurred or the ignition was switched off and the operating and display module, Climatronic Control Module J255 was not able	○ Perform basic setting of operating and display module, Climatronic Control Module J255 --> **Basic Setting (function 04)**. ○ Check coding transmitted via the

		to complete the function. • Basic setting not performed following replacement of operating and display module, Climatronic Control Module J255. • Basic setting performed with a non-coded or incorrectly coded operating and display module, Climatronic Control Module J255	CAN-Bus comfort system to the operating and display module, Climatronic Control Module J255 (reading measuring value block, display group "019") --> **Read Measuring Value Block (function 08)** and then perform basic setting of operating and display module, Climatronic Control Module J255 --> **Basic Setting (function 04)**.

NOTE:

- **The operating and display module, Climatronic Control Module J255 switches automatically to "ECON" mode if basic setting was not performed after installing a new operating and display module, Climatronic Control Module J255.**

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
01171 Front Passengers Heated Seat Temperature Sensor G60			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Open circuit in Front Passengers Seat Heating Element or in wiring	○ Use wiring diagram to locate and eliminate open circuit

		between Front Passengers Heated Seat Temperature Sensor G60 and operating and display module, Climatronic Control Module J255	○ Check Front Passengers Heated Seat Temperature Sensor G60 and corresponding wiring --> **Heated seats, testing**
01172 Drivers Heated Seat Temperature Sensor G59			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Open circuit in Drivers Seat Heating Element or in wiring between Drivers Heated Seat Temperature Sensor G59 and operating and display module, Climatronic Control Module J255	○ Use wiring diagram to locate and eliminate open circuit ○ Check Drivers Heated Seat Temperature Sensor G59 and corresponding wiring --> **Heated seats, testing**

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
01206 Ignition switched off time period signal			
	• Incorrect signal/SP	• After connection of Battery A , Instrument Cluster Control Module J285 effected reset and was therefore not	○ Start engine and allow to run for 30 seconds ○ Switch off engine ○ Switch on ignition ○ Check and

		able to transmit a time signal	erase DTC memory of operating and display module, Climatronic Control Module J255 ○ Check time signal from Instrument Cluster Control Module J285 (Reading measuring value block, display group "018") --> **Read Measuring Value Block (function 08)**.
		- Malfunction in Instrument Cluster Control Module J285	○ Check DTC memory of Instrument Cluster Control Module J285 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

NOTE:

- **If "ignition off time period signal" is not detected by the operating and display module, Climatronic Control Module J255 when the ignition is**

switched on (transmitted by Instrument Cluster Control Module J285 via CAN-Bus comfort system), the operating and display module, Climatronic Control Module J255 assumes a standing time of more than 4 hours and the engine temperature is taken to be the same as the ambient temperature. In heating mode, this can lead to delayed start-up of the Fresh Air Blower V2 despite the engine being warm. The Outside Air Temperature Display G106 in the instrument cluster may also display incorrect ambient temperature values.

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
01229 A/C Humidity Sensor G260			
	• Open circuit/short to positive/SP	• Incorrect version of operating and display module, Climatronic Control Module J255.	○ Check part number and index of operating and display module, Climatronic Control Module J255
	• Open circuit/short to positive/SP • Short to Ground (GND)/SP	• Short circuit, open circuit in wiring or incorrectly assigned connectors between A/C Humidity Sensor G260 and operating and display module, Climatronic Control Module J255 • Open circuit in power supply or Ground (GND) connection to A/C Humidity Sensor G260	○ Use wiring diagram to locate and eliminate short (to Ground (GND) or positive), open circuit in wiring or incorrectly assigned connectors between A/C Humidity Sensor G260 and operating and display module, Climatronic Control Module J255 ○ Use wiring diagram to

		- A/C Humidity Sensor G260 defective	locate and eliminate open circuit. ○ Replace A/C Humidity Sensor G260

NOTE:

- **The installation of an A/C Humidity Sensor G260 is not scheduled at present (date of introduction not yet finalized). This malfunction is displayed if a vehicle with no A/C Humidity Sensor G260 has been installed with an operating and display module, Climatronic Control Module J255 for vehicles with A/C Humidity Sensor G260 (not provided at present, date of introduction not yet finalized).**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01230 Left Footwell Vent Temperature Sensor G261			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit or open circuit in wiring between Left Footwell Vent Temperature Sensor G261 and operating and display module, Climatronic Control Module J255 • Left Footwell Vent Temperature Sensor G261 defective	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring ○ Check Left Footwell Vent Temperature Sensor G261 --> **Automatic Climate Control System, electrical testing**
01231 Right Footwell Vent Temperature Sensor G262			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit or open circuit in wiring	○ Use wiring diagram to locate and eliminate

		between Right Footwell Vent Temperature Sensor G262 and operating and display module, Climatronic Control Module J255 - Right Footwell Vent Temperature Sensor G262 defective	short circuit or open circuit in wiring ○ Check Right Footwell Vent Temperature Sensor G262 --> **Automatic Climate Control System, electrical testing**

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
01232 A/C Compressor Regulator Valve N280			
	- Short to Ground (GND)/SP - Short to positive/SP - Open circuit/SP	- Short circuit or open circuit in wiring between A/C Compressor Regulator Valve N280 and operating and display module, Climatronic Control Module J255 - Open circuit in Ground (GND) connection to A/C Compressor Regulator Valve N280	○ Use wiring diagram to locate and eliminate short circuit or open circuit in wiring

		• A/C Compressor Regulator Valve N280 defective	○ Check A/C Compressor Regulator Valve N280 --> **Automatic Climate Control System, electrical testing** and (Reading measuring value block, display group "001") --> **Read Measuring Value Block (function 08)**

NOTE:

- **The A/C Compressor Regulator Valve N280 is installed in the compressor --> 87 - AIR CONDITIONING**

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
01272 Central Air Flap Motor V70			
	• Blocked or no voltage/SP	• Short circuit, open circuit in wiring or wiring malfunction between Central Air Flap Motor V70 and operating and display module, Climatronic Control Module J255	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction
		• Central flap stiff	○ Check freedom of

			movement of central flap
		- Central Air Flap Motor V70 defective	○ Check Central Air Flap Motor V70 --> **Output Diagnostic Test Mode (DTM) (function 03)**

NOTE:

- **In the case of an operating and display module, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction "Short to Ground (GND)" or "Open circuit/short to positive" may also be displayed for this control motor. The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Blocked or no voltage".**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01273 Fresh Air Blower V2			
	- Blocked or no voltage/SP ○ Duty cycle transmitted 55 to 64 %	- Fresh Air Blower V2 blocked, e.g. by obstruction - Fresh Air Blower V2 defective	○ Remove Fresh Air Blower V2 and check for obstruction ○ Replace Fresh Air Blower V2
	- Defective ○ Duty cycle transmitted 15 to 24% or 65 to 74%	- Fresh Air Blower Control Module J126 in Fresh Air Blower V2 defective	○ Replace Fresh Air Blower V2
	- Short to Ground (GND)/SP - Open circuit/short to positive/SP	- Short circuit or open circuit in wiring between	○ Use wiring diagram to locate and eliminate short circuit

		Fresh Air Blower V2 (or to Fresh Air Blower Control Module J126) and operating and display module, Climatronic Control Module J255 • Open circuit in power supply or Ground (GND) connection to Fresh Air Blower V2 (or to Fresh Air Blower Control Module J126).	or open circuit in wiring ○ Use wiring diagram to locate and eliminate open circuit
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01273 (continued)			
	• Signal outside tolerance/SP ○ Duty cycle transmitted 75 to 84%	• Loose contact (short circuit, open circuit in wiring) or contact resistance between Fresh Air Blower V2 (or to Fresh Air Blower Control Module J126) and	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction. ○ Replace operating and display module, Climatronic Control

		operating and display module, Climatronic Control Module J255 • Problems with activation of Fresh Air Blower V2 by operating and display module, Climatronic Control Module J255 • Fresh Air Blower V2 defective	Module J255. ○ Replace Fresh Air Blower V2
	• Voltage supply too low/SP ○ Duty cycle transmitted 35 to 44%	• Voltage dips in vehicle electrical system to values below 9.5 V • Open circuit or contact resistance in power supply to Fresh Air Blower V2	○ Check Generator (GEN) C , Voltage Regulator (VR) C1 , Battery A and corresponding wiring ○ Use wiring diagram to check wiring to Fresh Air Blower Control Module J126
	• Voltage supply too high/SP ○ Duty cycle transmitted 25 to 34%	• Voltage in vehicle electrical system has exceeded 15 V	○ Check Generator (GEN) C and Voltage Regulator (VR) C1

NOTE:

- **The Fresh Air Blower V2 contains the Fresh Air Blower Control Module**

J126 as an integral component which cannot be replaced separately.

- **The status of the Fresh Air Blower is displayed in the measuring value block (display group "018"). By way of this status display, the operating and display module, Climatronic Control Module J255 is informed by the Fresh Air Blower Control Module J126 of any malfunctions at the Fresh Air Blower V2 --> Read Measuring Value Block (function 08).**
- **The malfunction "Voltage supply too high/SP" may also be displayed if an unsuitable charging unit is used for charging the Battery A.**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01274 Air Flow Flap Motor V71			
	• Blocked or no voltage/SP	• Short circuit, open circuit in wiring or wiring malfunction between Air Flow Flap Motor V71 and operating and display module, Climatronic Control Module J255 • Fresh-air or air flow flap stiff (left-hand drive vehicles) • Air Flow Flap Motor V71 defective	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction ○ Check freedom of movement of fresh-air and air flow flap ○ Check Air Flow Flap Motor V71 --> **Output Diagnostic Test Mode (DTM) (function 03)**
		• Operating and display unit, Climatronic Control Module J255 incorrectly coded.	○ Check coding of operating and display module, Climatronic Control Module J255

		• Comfort System Central Control Module J393 incorrectly coded.	and code transmitted to operating and display module, Climatronic Control Module J255 (Reading measuring value block, display group "019"), --> **Read Measuring Value Block (function 08)** ○ Check coding of Comfort System Central Control Module J393 and code control unit as specified if necessary "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

NOTE:

- **This control motor is used to activate the air flow/fresh-air flap.**
- **In the case of operating and display modules, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction**

"Short to Ground (GND)" or "Open circuit/short to positive" may also be displayed for this control motor. The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Blocked or no voltage".

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01312 Drive train CAN-Bus			
	Check DTC memory	• The Instrument Cluster Control Module J285 cannot output the required data because of a malfunction and sets a malfunction. • The Instrument Cluster Control Module J285 cannot output the required data because of a malfunction in an upstream component and sets a malfunction. • A control unit linked to the drive CAN-Bus system is not supplying the required data or there is a malfunction in the drive	○ Check DTC memory of Instrument Cluster Control Module J285 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Determine and eliminate the causes of all DTCs in the DTC memory of the Instrument Cluster Control Module J285. ○ check DTC memories of all control units connected to drive CAN-

		CAN-Bus system.	Bus system and locate and eliminate the drive CAN-Bus system faults displayed "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

NOTE:

- **If, for example, the engine control module does not supply any information on the current engine RPM (via the drive CAN-Bus system), the Instrument Cluster Control Module J285 cannot incorporate this information into the data for the CAN-Bus comfort system and this malfunction entry is made in the DTC memory of the operating and display module, Climatronic Control Module J255.**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01317 Instrument Cluster Control Module J285			
	• Check DTC memory	• The Instrument Cluster Control Module J285 cannot output the required data because of a malfunction and sets a malfunction. • The Instrument	○ Check DTC memory of Instrument Cluster Control Module J285 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle

		Cluster Control Module J285 cannot output the required data because of a malfunction in an upstream component and sets a malfunction.	Diagnosis Service Syst. VAS5052 ○ Determine and eliminate the causes of all DTCs in the DTC memory of the Instrument Cluster Control Module J285.
	• No communication/SP	• Open circuit in both signal wires (CAN-Bus system) between Instrument Cluster Control Module J285 and operating and display module, Climatronic Control Module J255	○ Use wiring diagram to locate and eliminate open circuit or loose contact at both signal wires (CAN-Bus system) between Instrument Cluster Control Module J285 and operating and display module, Climatronic Control Module J255 ○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
01317 (continued)			
	• No communication/SP	• Malfunction affecting data output in Instrument Cluster Control Module J285 or in a component connected to it	○ Check DTC memory of Instrument Cluster Control Module J285 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
		• No data transmitted by Instrument Cluster Control Module J285. • The operating and display module, Climatronic Control Module J255 cannot read the data transmitted by the Instrument Cluster Control Module J285.	○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.
		• Interruption	○ check and

		of voltage to Instrument Cluster Control Module J285 with ignition switched on	erase DTC memories of all control units connected to the various CAN-Bus systems "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01317 (continued)			
	• No communication/SP	• The Instrument Cluster Control Module J285 transmits the information correctly, however this malfunction is entered in the operating and display module, Climatronic Control Module J255 (up to software version "XX14")	○ Check display in measuring value blocks "125" and "126" and observe the notes on display zone "1" in measuring value block "125".

		because of a specific optional extra.	

NOTE:

- **Reception of the information is displayed in the measuring value block (display group "125") --> Read Measuring Value Block (function 08).**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01322 Multi-function Unit Control Module J501			
	• Check DTC memory • No communication (time out)/SP	• Refer to DTC code "00457" Vehicle Electrical System Control Module J519	○ Check DTC memory of Vehicle Electrical System Control Module J519 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Determine and eliminate the causes of all DTCs in the DTC memory of the Vehicle Electrical System Control Module J519.

NOTE:

- **With certain operating and display modules, Climatronic Control Module**

J255 , the Multi-function Unit Control Module J501 was stored as malfunction location in the software instead of the Vehicle Electrical System Control Module J519.

Display on Diagnostic Operation System VAS 5051A and print output	Possible cause	Corrective action
01326 Multi-function Steering Wheel Control Module J453		
• Check DTC memory • No communication (time out)/SP	• Refer to DTC code "00466" Steering Column Electronic Systems Control Module J527	○ Check DTC memory of Steering Column Electronic Systems Control Module J527 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Determine and eliminate the causes of all DTCs in the DTC memory of the Steering Column Electronic Systems Control Module J527.

NOTE:

- **With certain operating and display modules, Climatronic Control Module J255 , the Multi-function Steering Wheel Control Module J453 was stored as malfunction location in the software instead of the Steering Column**

Electronic Systems Control Module J527.

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
01330 Comfort System Central Control Module J393			
	- Check DTC memory	- The Comfort System Central Control Module J393 cannot output the required data because of a malfunction and sets a malfunction. - The Comfort System Central Control Module J393 cannot output the required data because of a malfunction in an upstream component and sets a malfunction.	○ Check DTC memory of Comfort System Central Control Module J393 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Determine and eliminate the causes of all DTCs in the DTC memory of the Comfort System Central Control Module J393.
	- No communication (time out)/SP	- Open circuit in both signal wires (CAN-Bus system) between Comfort System Central	○ Use wiring diagram to locate and eliminate open circuit or loose contact at both signal wires (CAN-

		Control Module J393 and operating and display module, Climatronic Control Module J255	Bus system) between Comfort System Central Control Module J393 and operating and display module, Climatronic Control Module J255 ○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01330 (continued)			
	- No communication (time out)/SP	- Malfunction affecting data output in Comfort System Central Control Module J393 or in a component connected to it	○ Check DTC memory of Comfort System Central Control Module J393 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

		- No data transmitted by Comfort System Central Control Module J393 - The operating and display module, Climatronic Control Module J255 cannot read the data transmitted by the Comfort System Central Control Module J393.	○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.
		- Interruption of voltage to Comfort System Central Control Module J393 with ignition switched on	○ check and erase DTC memories of all control units connected to CAN-Bus comfort system "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

NOTE:

- **Reception of the information is displayed in the measuring value block (display group "125") --> Read Measuring Value Block (function 08).**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01336 Group CAN-Bus comfort system			
	Defect (Bus Off)	• Open circuit or short to Ground (GND)/positive in CAN-Bus comfort system signal wire • Short circuit between CAN-Bus signal wires	○ Use wiring diagram to locate and eliminate short circuit (to Ground (GND), positive or between signal wires) or open circuit in CAN-Bus comfort system wiring
		• CAN-Bus signal wires interchanged	○ Use wiring diagram to check signal wires of CAN-Bus comfort system.
		• Destruction by one of the control units connected to the CAN-Bus comfort system of data transmitted.	○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01336 (continued)			
	Defect (Bus Off)	• Control unit not designed	○ Check part number of

		for CAN-Bus connected to CAN-Bus comfort system	all control units connected to CAN-Bus system "Guided fault-finding" function of Diagnostic Operation System VAS 5051 , "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
	In one-wire operation	• Open circuit or short to Ground (GND)/positive in CAN-Bus comfort system signal wire	○ Use wiring diagram to locate and eliminate short circuit (to Ground (GND), positive or between signal wires) or open circuit in CAN-Bus comfort system wiring
		• Destruction by one of the control units connected to the CAN-Bus	○ Check CAN-Bus comfort system --> **CAN-Bus comfort**

		comfort system of data transmitted on one of the two signal wires.	**system, checking**.
Continued in next table			

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01336 (continued)			
	• No messages (time out for several control modules)	• Open circuit in wiring, e.g. at junction of CAN-Bus signal wires • Open circuit in power supply to one or more control unit (s) connected to CAN-Bus comfort system	○ Use wiring diagram to locate and eliminate open circuit in wiring in CAN-Bus comfort system • Use wiring diagram to locate and eliminate open circuit in power supply to one or more control unit (s) connected to CAN-Bus comfort system. , "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

NOTE:

- **Reception of the information is displayed in the measuring value block (display group "125") --> Read Measuring Value Block (function 08).**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01592 Air Quality Sensor G238			
	• Open circuit/short to positive/SP • Short to Ground (GND)/SP	• Short circuit, open circuit in wiring or incorrectly assigned connectors between Air Quality Sensor G238 and operating and display module, Climatronic Control Module J255 • Incorrect version of operating and display module, Climatronic Control Module J255.	○ Use wiring diagram to locate and eliminate short (to Ground (GND) or positive), open circuit in wiring or incorrectly assigned connectors between Air Quality Sensor G238 and operating and display module, Climatronic Control Module J255 ○ Check part number and index of operating and display module, Climatronic Control Module J255
	• Defective	• Open circuit in power supply or Ground (GND) connection to Air Quality	○ Locate and eliminate open circuit in power supply or Ground (GND)

		Sensor G238 • Air Quality Sensor G238 defective	connection to Air Quality Sensor G238 ○ Replace Air Quality Sensor G238
	• Electr. fault in circuit/SP	• Air Quality Sensor G238 defective	○ Replace Air Quality Sensor G238

NOTE:

- **Under certain circumstances, radio wave interference (e.g. amateur or police radio systems) may cause sporadic malfunction entries for the Air Quality Sensor G238. this malfunction entry can be erased if applicable as the function of the operating and display module, Climatronic Control Module J255 is not affected.**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01593 Heated Windshield Z2			
	• Short to positive/SP	• Operating and display unit, Climatronic Control Module J255 not coded according to specifications.	○ Check coding of operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255, coding (function 07)** (coding for specific equipment).
		• Short circuit or open circuit in wiring between Heated Windshield	○ Use wiring diagram to locate and eliminate short circuit or open circuit.

		Control Module J505 and operating and display module, Climatronic Control Module J255 • Open circuit in power supply or Ground (GND) connection to Heated Windshield Control Module J505	○ Check activation of Heated Windshield Z2 --> **Heated Windshield Z2 , checking activation**
		• Heated Windshield Control Module J505 defective	○ Replace Heated Windshield Control Module J505

NOTE:

- **If, on a vehicle with no Heated Windshield Z2 , the operating and display module, Climatronic Control Module J255 is coded for a vehicle with the Heated Windshield Z2 optional extra, the malfunction "Open circuit/short to Ground (GND)" or "Short to positive" is entered (depending on software version in operating and display module, Climatronic Control Module J255).**
- **In the case of an operating and display module, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction displayed for the Heated Windshield Z2 may also be "Open circuit/short to Ground (GND)". The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Short to positive".**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01794 Control module incorrect Vehicle Identification Number (VIN)			
		• VIN stored in operating and display module,	○ Check transmitted and actual VIN and

		Climatronic Control Module J255 different to that transmitted by CAN-Bus comfort system	compare to VIN stored in operating and display module, Climatronic Control Module J255 (Reading measuring value block" function, display group "081") and read out measuring value block of Instrument Cluster Control Module J285 Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Use the "Adaptation" function to erase the VIN stored in the operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module**

			J255, Adaptation (function 10).

NOTE:

- New replacement operating and display modules, Climatronic Control Module J255 are supplied without VIN coding. The first time the ignition is switched on following installation, the VIN transmitted via the CAN-Bus comfort system is read into the operating and display module, Climatronic Control Module J255 (as of hardware/software version "0711") and stored (anti-theft protection).
- The VIN stored in the operating and display module, Climatronic Control Module J255 is indicated in display group "081" (Reading measuring value block).
- If an operating and display module, Climatronic Control Module J255 (as of hardware/software version "0711") is installed in a different vehicle (e.g. swapped over), the transmitted and stored VINs no longer coincide and the malfunction "Control module incorrect Vehicle Identification Number (VIN)" is stored in the operating and display module, Climatronic Control Module J255. Entering the PIN in the "Adaptation" function erases the VIN stored in the operating and display module, Climatronic Control Module J255 --> Climatronic Control Module J255, Adaptation (function 10).

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01809 Left Temperature Flap Motor V158			
	• Blocked or no voltage/SP	• Short circuit, open circuit in wiring or wiring malfunction between Left Temperature Flap Motor V158 and operating and display module, Climatronic Control Module J255	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction
		• Left temperature flap stiff	○ Check freedom of movement of left

		Left Temperature Flap Motor V158 defective	temperature flap Check Left Temperature Flap Motor V158 --> **Output Diagnostic Test Mode (DTM) (function 03)**

NOTE:

- **In the case of an operating and display module, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction "Short to Ground (GND)" or "Open circuit/short to positive" may also be displayed for this control motor. The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Blocked or no voltage".**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01810 Right Temperature Flap Motor V159			
	Blocked or no voltage/SP	Short circuit, open circuit in wiring or wiring malfunction between Right Temperature Flap Motor V159 and operating and display module, Climatronic Control Module J255	Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction
		Right temperature flap stiff Right Temperature Flap Motor	Check freedom of movement of right temperature flap

		V159 defective	○ Check Right Temperature Flap Motor V159 --> **Output Diagnostic Test Mode (DTM) (function 03)**

NOTE:

- **In the case of an operating and display module, Climatronic Control Module J255 up to hardware/software version "0203" , the type of malfunction "Short to Ground (GND)" or "Open circuit/short to positive" may also be displayed for this control motor. The malfunction with these operating and display modules, Climatronic Control Module J255 is the same as for the malfunction "Blocked or no voltage".**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01841 Left Temperature Flap Potentiometer/Actuator G220 in Left Temperature Flap Motor V158			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit, open circuit in wiring or wiring malfunction between Left Temperature Flap Potentiometer/Actuator G220 and operating and display module, Climatronic Control Module J255 • Left Temperature Flap Potentiometer/Actuator G220 in Left Temperature Flap Motor V158 defective	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction ○ Replace Left Temperature Flap Motor V158
	• Adaptation limit exceeded	• Temperature flap stiff • Left Temperature Flap Potentiometer/Actuator G220 in Left Temperature Flap Motor V158 defective	○ Check freedom of movement of temperature flap ○ Replace Left Temperature

			Flap Motor V158

NOTE:

- **The DTC "Adaptation limit exceeded" is only detected during basic setting. If this malfunction occurs, a substitute value is stored as adaptation value (adaptation value for this potentiometer) and displayed in the corresponding measuring value block.**
- **If the malfunction "Adaptation limit exceeded" is displayed, check whether flap reaches both end stops and that there is no excessive play in the operating levers (wear).**

Display on Diagnostic Operation System VAS 5051A and print output		**Possible cause**	**Corrective action**
01842 Right Temperature Flap Potentiometer/Actuator G221 in Right Temperature Flap Motor V159			
	• Short to Ground (GND)/SP • Open circuit/short to positive/SP	• Short circuit, open circuit in wiring or wiring malfunction between Right Temperature Flap Potentiometer/Actuator G221 and operating and display module, Climatronic Control Module J255 • Right Temperature Flap Potentiometer/Actuator G221 in Right Temperature Flap Motor V159 defective	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or wiring malfunction ○ Replace Right Temperature Flap Motor V159
	Adaptation limit exceeded	• Temperature flap stiff • Right Temperature Flap Potentiometer/Actuator G221 in Right Temperature Flap Motor V159 defective	○ Check freedom of movement of temperature flap ○ Replace Right Temperature Flap Motor V159

NOTE:

- **The DTC "Adaptation limit exceeded" is only detected during basic setting. If this malfunction occurs, a substitute value is stored as adaptation value**

(adaptation value for this potentiometer) and displayed in the corresponding measuring value block.

- **If the malfunction "Adaptation limit exceeded" is displayed, check whether flap reaches both end stops and that there is no excessive play in the operating levers (wear).**

Display on Diagnostic Operation System VAS 5051A and print output		Possible cause	Corrective action
65535 Control unit defective/SP			
		• Open circuit in wiring to operating and display module, Climatronic Control Module J255 (terminal "30" , "75" or terminal "31") • Loose contact or contact resistance in wiring to operating and display module, Climatronic Control Module J255	○ Use wiring diagram to locate and eliminate fault in wiring ○ Check buttons of operating and display module, Climatronic Control Module J255 for dirt and clean if necessary.
		• One or more buttons of operating and display module, Climatronic Control Module J255 constantly pressed (button sticking)	○ Replace operating and display module, Climatronic Control Module J255
		• Malfunction	○ Replace

		in program sequence of operating and display module, Climatronic Control Module J255 • Operating and display unit, Climatronic Control Module J255 defective	operating and display module, Climatronic Control Module J255

OUTPUT DIAGNOSTIC TEST MODE (DTM) (FUNCTION 03)

Output Diagnostic Test Mode (DTM) (function 03)

Note the following as regards Output Diagnostic Test Mode (DTM) diagnosis

- The A/C Compressor Regulator Valve N280 is only activated by the operating and display module, Climatronic Control Module J255 with the engine stopped.
- The request for activation of the Coolant fan (speed "1" and speed "2") is always transmitted by the operating and display module, Climatronic Control Module J255 to the relevant engine control module. However, the engine control module only switches on the fan(s) if the engine is running "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.
- Output Diagnostic Test Mode (DTM) diagnosis can only be implemented up to an engine speed of 3000 RPM and at vehicle speeds below 5 km/h.
- For install locations of components activated, refer to --> **A/C system control and regulation components**.

- If necessary, Output Diagnostic Test Mode (DTM) diagnosis can be repeated several times.
- Control element malfunctions are stored in the DTC memory.
- Control action and the display of the operating and display module, Climatronic Control Module J255 are deactivated during Output Diagnostic Test Mode (DTM) diagnosis (depending on version, 22 °C appears for example in both displays). The "segment test" function is the only function during which the display segments of the operating and display module, Climatronic Control Module J255 are activated.
- The air conditioner control motors are moved into a predetermined position by the operating and display module, Climatronic Control Module J255 after selecting the "Output Diagnostic Test Mode (DTM) diagnosis" function. During Output Diagnostic Test Mode (DTM) diagnosis, it is therefore not necessary to wait for the control motors to reach a specified position.

NOTE:

- **On vehicles with 8-cyl. engine, the compressor is not driven via a belt, but rather by way of a shaft --> Vehicles with 8 cyl. engine (compressor drive via a shaft).**

Initiating output DTM

- With the ignition switched off, connect Diagnostic Operation System VAS 5051A using, for example, Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A) to the 16-pin diagnostic socket in the vehicle --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.
- Switch on ignition/start engine.

NOTE:

- **Switch on ignition (engine not running, for checking activation of A/C Compressor Regulator Valve N280).**
- **Start engine (to check activation of Coolant Fan V7).**

- Set "Auto" mode on the operating and display module, Climatronic Control Module J255.
- Use address word "08" to select A/C heater electronics --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.
- Open instrument panel vents.
- Check DTC memory of operating and display module, Climatronic Control Module J255 --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)**.

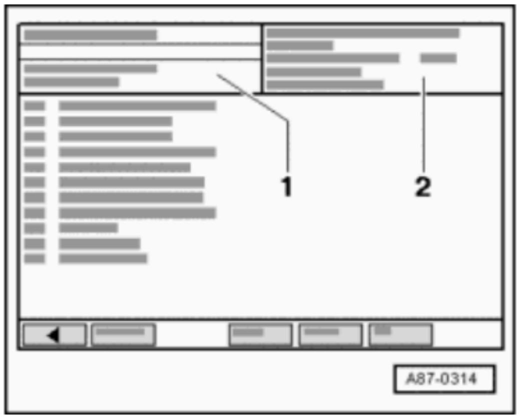

Fig. 10: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- Select function "03 - Output Diagnostic Test Mode (DTM) diagnosis".

Indicated on display of Diagnostic Operation System VAS 5051A :

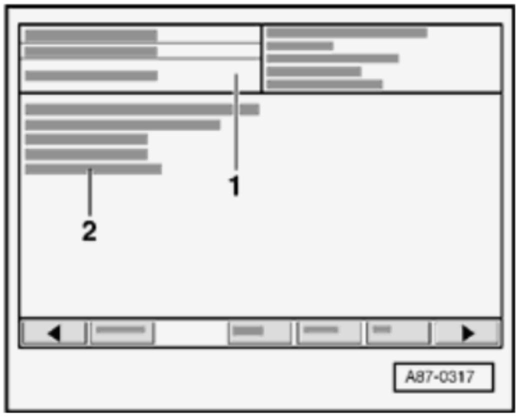

Fig. 11: Identifying Display Field Showing Which Control Element Is Currently Being Activated & Gives Consecutive List Of Control Elements Already Activated
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - shows which control element is currently being activated (e.g. 1st control element in test).
- Display field - **2** - gives a consecutive list of control elements already activated and the one currently being activated. The one currently being activated appears in the bottom line.

- Touch --> key to select next component. Function and sequence --> **Activated Actuators**.

NOTE:

- **Touch <-- key to return to selection program.**
- **Output Diagnostic Test Mode (DTM) diagnosis can be terminated by pressing C key.**
- **On completion of Output Diagnostic Test Mode (DTM) diagnosis, check DTC memory --> Diagnostic Trouble Code (DTC) Memory, checking (function 02).**
- **If Output Diagnostic Test Mode (DTM) diagnosis is aborted, check DTC memory --> Diagnostic Trouble Code (DTC) Memory, checking (function 02) and read measuring value block (display group "002") --> Read Measuring Value Block (function 08).**

Activated Actuators

Indicated on display	Specified function	Corrective action
A/C Compressor Regulator Valve N280 (observe notes)	• The A/C Compressor Regulator Valve N280 is switched on and off at 5-second intervals. ○ This causes the compressor to be switched on and off. ○ The A/C Compressor Regulator Valve N280 is activated such that there is a current flow of approx. 0.65 to 0.8 A.	○ Eliminate compressor shutoff condition --> **Read Measuring Value Block (function 08)** ○ Check A/C

		Compressor Regulator Valve N280 --> **Automatic Climate Control System, electrical testing**.

NOTE:

- **At present, the A/C Compressor Regulator Valve N280 is only activated when the engine is not running. If the engine is running, this control element is not displayed during Output Diagnostic Test Mode (DTM) diagnosis (depending on version of operating and display module, Climatronic Control Module J255) by the Diagnostic Operation System VAS 5051A and not activated by the operating and display module, Climatronic Control Module J255.**
- **The regulating valve is installed in the compressor --> 87 - AIR CONDITIONING**
- **The current flow with the A/C Compressor Regulator Valve N280 activated can be measured for example using a current probe measuring leads 1 2 --> Automatic Climate Control System, electrical testing.**
- **If there is a further compressor shutoff condition in addition to compressor shutoff condition "5 = Engine speed less than 300 RPM" , the A/C Compressor Regulator Valve N280 is not activated.**

Indicated on display	Specified function	Corrective action
Fresh Air Blower V2	• Fresh Air Blower V2 in operation ○ The Fresh Air Blower speed changes continuously within 5 to 8 seconds between 0% and 88% (100%) of the maximum speed	○ Check freedom of movement of Fresh Air Blower V2 ○ Use wiring diagram to check positive and Ground (GND) connection to Fresh Air Blower Control Module J126 ○ Check Fresh Air Blower Control Module J126 ○ Use wiring diagram to check wiring between

		Fresh Air Blower Control Module J126 and operating and display module, Climatronic Control Module J255 ○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**
WARNING: Fan is switched on	Info display	
	WARNING:	
	After the --> button is next pressed, the Coolant Fan V7 is/are switched on.	

CAUTION: Keep hands out of Coolant Fan V7 area.

Indicated on display	Specified function	Corrective action
Coolant Fan Control (FC)Control Module J293 , speed "1" + "2" (observe notes)	- The operating and display module, Climatronic Control Module J255 transmits the request for activation of the Coolant Fan V7 (via the CAN-Bus system) to the relevant engine control module. Activation changes constantly within approx. 10 to 30 seconds between 0% and 30 to 100% of maximum speed (depending on engine control unit). ○ By way of the Coolant Fan Control (FC)Control Module J293 and with the engine running, the relevant engine control module switches the fan from 0% to 30 to 100% of the Coolant Fan V7 speed (depending on engine control unit). ○ The Coolant Fan V7 speed changes depending on activation (from "Off" to the "maximum	○ Check DTC memory of operating and display module, Climatronic Control Module J255. Malfunctions should not be displayed --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)**. ○ Check DTC

	speed" requested by the engine control module).	memory of relevant engine control module and check activation of Coolant Fan V7 by engine control unit via Coolant Fan Control (FC) Control Module J293 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052. ○ Check power supply and Ground (GND) connection to Coolant Fan Control (FC) Control Module J293 and to Coolant Fan V7.

NOTE:

- **Start the engine if activation of the Coolant Fan V7 must be checked. The relevant engine control module only switches on the Coolant Fan V7 when the engine is running.**
- **The request for activation of the Coolant Fan V7 is transmitted via the CAN-Bus comfort system by the operating and display module, Climatronic Control Module J255 to the Instrument Cluster Control Module J285. The Instrument Cluster Control Module J285 (gateway) then transmits the request to the drive CAN-Bus system to which the relevant engine control module is connected. By means of a square-wave signal, the engine control module subsequently activates the Coolant Fan Control (FC)Control Module J293 and the Coolant Fan Control (FC)Control Module J293 switches on the Coolant Fan V7.**
- **Depending on the version of the operating and display module, Climatronic Control Module J255 , the Coolant Fan V7 is either activated in speeds "1" and "2" in one test step or switching may be necessary for**

activation of speed "2".

Indicated on display	Specified function	Corrective action
Interior Temperature Sensor Fan V42	- The Interior Temperature Sensor Fan V42 is switched on and off at 5-second intervals. ○ Installed in operating and display module, Climatronic Control Module J255 ○ Smoke is drawn in through the intake frame of the Interior Temperature Sensor Fan V42	○ Check for blockage of intake frame installed in operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**. ○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

NOTE:

- **Use smoke to check operation of Interior Temperature Sensor Fan V42 (hold smoke generator in front of intake frame installed in operating and display module, Climatronic Control Module J255).**
- **The Interior Temperature Sensor Fan V42 is permanently installed in the operating and display module, Climatronic Control Module J255 and cannot be replaced separately.**

Indicated on display	Specified function	Corrective action
Left Temperature Flap Motor V158	- The Left Temperature Flap Motor V158 moves from stop to stop	○ Check freedom of movement of left temperature flap
○ Open all instrument panel vents.	- The Fresh Air Blower V2 runs at approx. 60 % of maximum speed ○ The temperature of the air flowing out of the left instrument panel vents changes (with warm engine)	○ Use wiring diagram to check wiring between Left Temperature Flap Motor V158 and operating and

		display module, Climatronic Control Module J255 for open circuit or interchange ○ Check Left Temperature Flap Motor V158 --> **Automatic Climate Control System, electrical testing**. ○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.
Right Temperature Flap Motor V159	• The Right Temperature Flap Motor V159 moves from stop to stop	○ Check freedom of movement of right temperature flap
○ Open all instrument panel vents.	• The Fresh Air Blower V2 runs at approx. 60 % of maximum speed ○ The temperature of the air flowing out of the right instrument panel vents changes (with warm engine)	○ Use wiring diagram to check wiring between Right Temperature Flap Motor V159 and operating and display module, Climatronic Control Module J255 for open circuit or interchange ○ Check Right Temperature Flap Motor V159 --> **Automatic Climate Control**

		System, electrical testing. - Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

Indicated on display	Specified function	Corrective action
Central Air Flap Motor V70	- The Central Air Flap Motor V70 moves from stop to stop	- Check freedom of movement of central flap
- Open all instrument panel vents.	- The Fresh Air Blower V2 runs at approx. 60 % of maximum speed - The footwell/defroster flap is set to "Air to footwell" position - The air distribution changes from footwell/defrost to instrument panel vents	- Use wiring diagram to check wiring between Central Air Flap Motor V70 and operating and display module, Climatronic Control Module J255 for open circuit or interchange - Check Central Air Flap Motor V70 --> **Automatic Climate Control System, electrical testing**. - Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing**

		and installing.
Defroster Flap Motor V107	- The Defroster Flap Motor V107 moves from stop to stop	○ Check freedom of movement of footwell/defroster flap
○ Open all instrument panel vents.	- The Fresh Air Blower V2 runs at approx. 60 % of maximum speed - The central flap is closed (air to footwell/defroster flap) ○ The air distribution changes from footwell to defrost (to windshield)	○ Use wiring diagram to check wiring between Defroster Flap Motor V107 and operating and display module, Climatronic Control Module J255 for open circuit or interchange ○ Check Defroster Flap Motor V107 --> **Automatic Climate Control System, electrical testing**. ○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

NOTE:

- **Depending on the version of the operating and display module, Climatronic Control Module J255 , the activation sequence is different for the Air Flow Flap Motor V71 and the Recirculation Flap Motor V113 On vehicles manufactured at the start of production, the Air Flow Flap Motor V71 is activated first; on vehicles as of VIN 400000 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN) the Recirculation Flap Motor V113 is activated first.**

Indicated on display	Specified function	Corrective action

Air Flow Flap Motor V71	• The Air Flow Flap Motor V71 moves from stop to stop	○ Check freedom of movement of air flow/fresh air flaps
○ Open all instrument panel vents.	• The Fresh Air Blower V2 runs at approx. 60 % of maximum speed • The recirculated-air flap is closed. ○ The air flow/fresh-air flaps open and close. ○ The flow of air from the vents changes.	○ Use wiring diagram to check wiring between Air Flow Flap Motor V71 and operating and display module, Climatronic Control Module J255 for open circuit or interchange ○ Check Air Flow Flap Motor V71 --> **Automatic Climate Control System, electrical testing**. ○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

NOTE:

- **This control motor is used to activate the air flow/fresh-air flaps.**

Indicated on display	Specified function	Corrective action
Recirculation Flap Motor V113	• The Recirculation Flap Motor V113 moves from stop to stop	○ Check freedom of movement of recirculated-air flap (and fresh-air flaps)
○ Open all instrument panel	• The Fresh Air Blower V2 runs at approx. 60 % of maximum speed	○ Use wiring diagram to check

vents.	• The fresh-air and air flow flap is closed. ○ The recirculated-air flap (and fresh-air flap) opens and closes. ○ The flow of air from the vents changes (left-hand drive vehicles). ○ The air is alternately drawn in the passengers footwell or via the dust and pollen filter (right-hand drive vehicles)	wiring between Recirculation Flap Motor V113 and operating and display module, Climatronic Control Module J255 for open circuit or interchange ○ Check Recirculation Flap Motor V113 --> **Automatic Climate Control System, electrical testing**. ○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

NOTE:

- **The Recirculation Flap Motor V113 only moves the recirculated-air flap. The air flow/fresh-air flaps are moved by the Air Flow Flap Motor V71.**

Indicated on display	Specified function	Corrective action
Segment test	• All display segments, the function indicator lamps in the buttons and the illumination of the operating and display module, Climatronic Control Module J255 are switched on and off at 2-second intervals.	○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

The activation sequence for the components listed in the following is governed by the optional extras in the vehicle and the version of the operating and display module, Climatronic Control Module J255.

- The vehicles manufactured at the start of production are installed with an operating and display module, Climatronic Control Module J255 with which, e.g. following the "segment test" , the Heated Rear Window Z1 is activated first and then (if installed as optional extras) the Heated Windshield Z2 , the Drivers Seat Heating Element Z6 and the Front Passengers Seat Heating Element Z8.
- On vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN), the Drivers Seat Heating Element Z6 and the heated Front Passengers Seat Heating Element Z8 are activated first for example (if installed as optional extras). This is followed by activation of the Heated Rear Window Z1 and (if installed as optional extra) the Heated Windshield Z2.

Indicated on display	Specified function	Corrective action
Heated Rear Window Z1	• The Heated Rear Window is switched on once for 10 seconds ○ The Heated Rear Window Z1 becomes warm in the area of the heating coils.	○ Check activation and resistance values of Heated Rear Window Z1 --> **Heated Rear Window Z1 , testing** ○ Check Rear Window Defogger Relay J9 (as of VIN 400000 in Model Year 2005 for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN) ○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

NOTE:

- **On vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 is activated directly by the operating and display module, Climatronic Control Module J255 (the relay for switching the current is installed in the operating and display module, Climatronic Control Module J255).**
- **On vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 will no longer be activated directly by the operating and display module, Climatronic Control Module J255 (operating and display modules, Climatronic Control Module J255 with part No. index "AJ" onwards are no longer installed with a relay). On these vehicles, the Heated Rear Window Z1 is activated via the Rear Window Defogger Relay J9.**
- **The activation function of the operating and display module, Climatronic Control Module J255 for the Heated Rear Window Z1 can be checked, for example on vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN) during Output Diagnostic Test Mode (DTM) diagnosis using the multimeter V.A.G 1715. Connect the current probe measuring leads 1 2 to the positive wire from the operating and display module, Climatronic Control Module J255 to the Heated Rear Window Z1 and select the "Current measurement via current probe measuring leads 1 2" function on the multimeter. The display changes from approx. 0 A to greater than 7 A.**
- **If, after the control element Heated Rear Window Z1 on vehicles with no "Heated Windshield" as optional extra, this control element is displayed, check coding of operating and display module, Climatronic Control Module J255 --> Climatronic Control Module J255, coding (function 07).**

Indicated on display	Specified function	Corrective action
END	Info display ○ End of control element test, e.g. for vehicles with neither heated seats nor Heated Windshield as optional extras	

Indicated on display	Specified function	Corrective action
Heated Windshield Z2	• The Heated Windshield Control Module J505 is activated for approx. 10 seconds. ○ The Heated Windshield Control Module J505 switches on the Heated Windshield Z2 if the electrical system voltage is greater than 12.7 V.	○ Read measuring value block (display group "015") --> **Read Measuring Value Block (function 08)**

		o Use wiring diagram to check power supply and Ground (GND) connection to Heated Windshield Control Module J505. o Use wiring diagram to check wiring between operating and display module, Climatronic Control Module J255 and Heated Windshield Control Module J505. o Check activation and resistance values of Heated Windshield Z2 --> **Heated Rear Window Z1 , testing** o Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

NOTE:

- **If, on vehicles with no "Heated Windshield" as optional extra, this control element is activated, check coding of operating and display module, Climatronic Control Module J255 --> Climatronic Control Module J255, coding (function 07).**
- **During Output Diagnostic Test Mode (DTM) diagnosis, the Heated Windshield Z2 is only activated by the operating and display module,**

Climatronic Control Module J255 up to a passenger compartment temperature of approx. 40 °C. If the temperature is higher, "Function unknown or cannot be implemented at present" appears on the Fault Readout Device display.

- **The activation function of the Heated Windshield Control Module J505 can be checked for example using the multimeter V.A.G 1715. Connect the current probe measuring leads 1 2 to the positive wire from the Heated Windshield Control Module J505 to the Heated Windshield Z2 and, on multimeter V.A.G 1715 , select the "Current measurement via current probe measuring leads 1 2" function. The display changes from approx. 0 A to greater than 7 A.**
- **Operation of the Heated Windshield Z2 is displayed in the measuring value block of the operating and display module, Climatronic Control Module J255 (display group "015") --> Read Measuring Value Block (function 08) and --> Windshield defroster.**

Indicated on display	Specified function	Corrective action
Drivers Seat Heating Element Z6	• The driver seat cushion heater element is activated for approx. 10 seconds.	○ Use wiring diagram to check Ground (GND) connection to heater element in Drivers Seat Heating Element Z6. ○ Use wiring diagram to check wiring between operating and display module, Climatronic Control Module J255 and Drivers Seat Heating Element Z6. ○ Check activation and resistance values of Drivers Seat Heating Element Z6 --> **Heated Rear Window Z1 , testing** ○ Replace operating

		and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

NOTE:

- **The heated seat cushions are only activated in the case of an operating and display module, Climatronic Control Module J255 equipped with a heated seat cushion potentiometer (observe part No. and index) .**
- **The activation function for the heated seat cushions can be checked for example using the multimeter V.A.G 1715. Connect the current probe measuring leads 1 2 to the positive wire to the seat cushion heater element and, on multimeter V.A.G 1715 , select the "Current measurement via current probe measuring leads 1 2" function. The display changes from approx. 0 A to greater than 2 A.**

Indicated on display	**Specified function**	**Corrective action**
Front Passengers Seat Heating Element Z8	- The front passenger seat cushion heater element is activated for approx. 10 seconds.	○ Use wiring diagram to check Ground (GND) connection to heater element in Front Passengers Seat Heating Element Z8. ○ Use wiring diagram to check wiring between operating and display module, Climatronic Control Module J255 and Front Passengers Seat Heating Element Z8. ○ Check activation and resistance values of Front Passengers Seat

		Heating Element Z8 --> **Heated Rear Window Z1 , testing** ○ Replace operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255 , removing and installing**.

NOTE:

- **The heated seat cushions are only activated in the case of an operating and display module, Climatronic Control Module J255 equipped with a heated seat cushion potentiometer (observe part No. and index) .**
- **The activation function for the heated seat cushions can be checked using the multimeter V.A.G 1715. Connect the current probe measuring leads 1 2 to the positive wire to the seat cushion heater element and, on multimeter V.A.G 1715 , select the "Current measurement via current probe measuring leads 1 2" function. The display changes from approx. 0 A to greater than 2 A.**

BASIC SETTING (FUNCTION 04)

Basic Setting (function 04)

- ○ With the ignition switched off, connect Diagnostic Operation System VAS 5051A using Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A) to the 16-pin diagnostic socket in the vehicle --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.
- ○ Switch ignition on.
- ○ Use address word "08" to select A/C heater electronics --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.

Requirements:

- DTC memory checked, displayed faults eliminated and DTC memory erased --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)**.
- Instrument Cluster Control Module J285 coded as specified and adaptation performed --> **Climatronic Control Module J255, coding (function 07)** , Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
- Air conditioner switched on ("ECON" or "Auto" mode)

- ○ Check coding of operating and display module, Climatronic Control Module J255 and correct if necessary --> **Read Measuring Value Block (function 08)**.

NOTE:

- **The currently valid code is displayed in the measuring value block (display group "019") --> Climatronic Control Module J255, coding (function 07).**

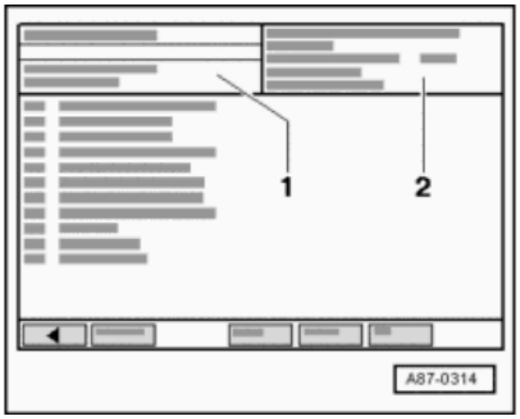

Fig. 12: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- ○ Select function "04 - Basic setting".

Indicated on display of Diagnostic Operation System VAS 5051A :

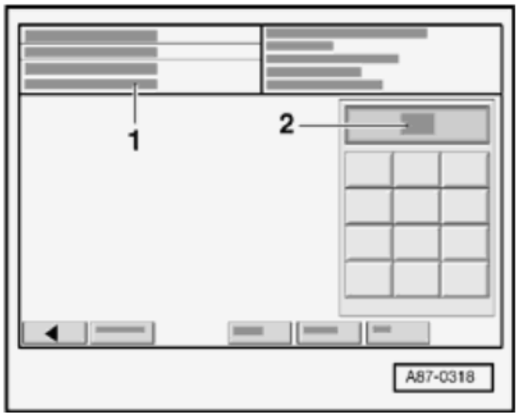

Fig. 13: Identifying Diagnostic Operation System VAS 5051A (Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Prompt for entering display group appears in display zone - **1** -.
- Input keypad appears in display zone - **2** -.

- ○ Use input keypad in display zone - **2** - to enter "01" or "001" for "display group number 001" and confirm by touching Q key.

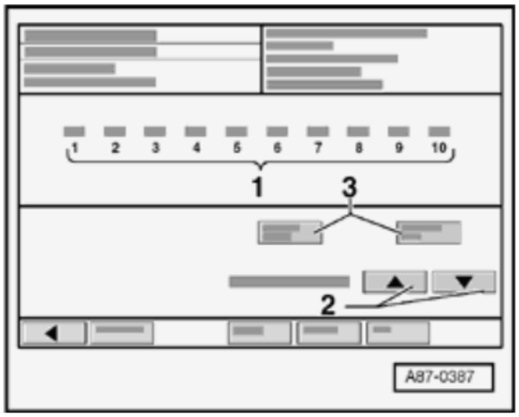

Fig. 14: Identifying Activated Control Motors & Feedback Value
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

The following control motors are now activated and their current feedback value is indicated in display zone "1". At present the control motors are arranged as follows:

- 1. Position: Left Temperature Flap Motor V158
- 2. Position: Right Temperature Flap Motor V159
- 3. Position: Defroster Flap Motor V107
- 4. Position: Central Air Flap Motor V70

- 5. Position: Air Flow Flap Motor V71 (left-hand drive vehicles only; "255" is displayed for right-hand drive vehicles with no control motor, as there is no control motor connected)
- 6. Position: Recirculation Flap Motor V113

The code entered in the Instrument Cluster Control Module J285 is checked via the CAN-Bus comfort system and the settings intended for the air conditioner are adopted --> **Climatronic Control Module J255, coding (function 07)** , --> **Read Measuring Value Block (function 08)** (the currently valid code is displayed in the measuring value block, display group "019"), Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.

The end positions of the control motors (resistance values in stop position) are stored in the operating and display module, Climatronic Control Module J255 (resistance value of potentiometers in control motors) and used for further control action.

Once the control motors have reached both end stops, they are moved again from one stop to the other. During this process, the adjustment time is measured and stored in the operating and display module, Climatronic Control Module J255 for use in the event of emergency operation.

Indicated on display of Diagnostic Operation System VAS 5051A :

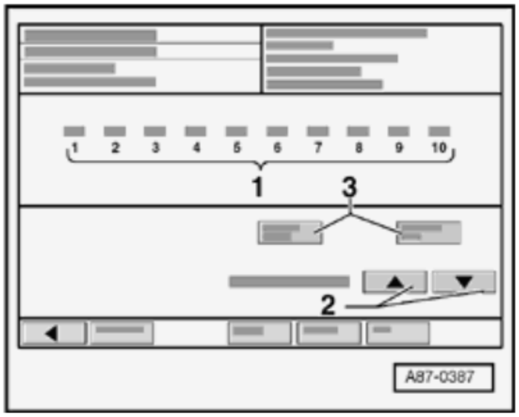

Fig. 15: Identifying Activated Control Motors & Feedback Value
Courtesy of VOLKSWAGEN UNITED STATES, INC.

The movement of the control motors can be observed on the display (zone - **1** -) (the feedback values in display zones "1" to "6" change).

Wait until display "0" appears in display zone - **1** - for the feedback values indicated.

NOTE:

- **Basic setting has been completed when "0" appears in display zones.**
- **Touch <-- key to return to selection program.**
- **If a fault in a control motor potentiometer is detected during basic setting, a substitute value is stored as adaptation value (learned value for this potentiometer) and displayed in the appropriate measuring value block. The DTC "Adaptation limit exceeded" is stored in the DTC memory for this control motor.**
- **On starting basic setting, the temperature display unit transmitted by the CAN-Bus comfort system is read and the unit (°C or °F) set in the Instrument Cluster Control Module J285 is adopted. Simultaneously pressing the recirculated-air button and the + temperature button for the left side for more than 2 seconds permits switching of the display of the operating and display module, Climatronic Control Module J255.**
- **Touching the keys - 2 - permits switching to a different display group.**
- **Touching the keys - 3 - permits switching to a different function (e.g. from "Basic setting" to "Reading measuring value block" and back again).**

- Check DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)**.
- After display and printout of last fault, rectify faults in line with DTC table --> **Diagnostic Trouble Code (DTC) table**.

NOTE:

- **If a fault has been detected and eliminated, basic setting must be repeated.**

DIAGNOSTIC TROUBLE CODE (DTC) MEMORY, ERASING (FUNCTION 05)

Diagnostic Trouble Code (DTC) Memory, erasing (function 05)

- With the ignition switched off, connect Diagnostic Operation System VAS 5051A using, Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A) to the 16-pin diagnostic socket in the vehicle --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.
- Switch ignition on.
- Use address word "08" to select A/C heater electronics --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.

Erasing DTC memory

Requirements:

- DTC memory checked --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and all displayed faults rectified

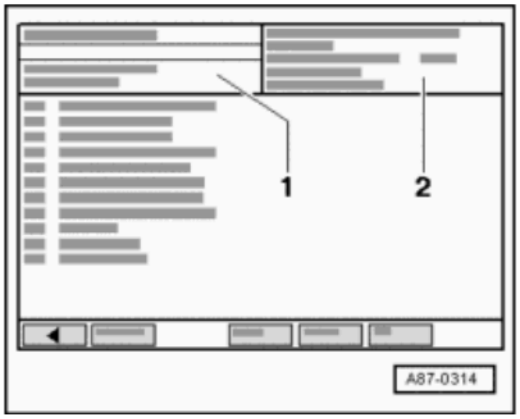

Fig. 16: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- Select function "05 - Erasing DTC memory".

Indicated on display of Diagnostic Operation System VAS 5051A :

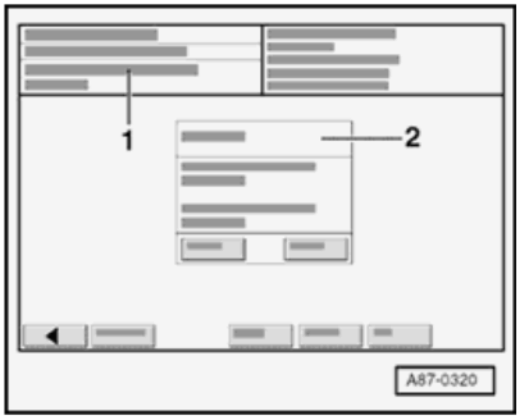

Fig. 17: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- There is no display in zone - **1** -.
- A box appears in display zone - **2** - with a message indicating that touching OK key will erase data (of fault memories) and requiring confirmation that function must be implemented.

NOTE:

- **If display zone - 1 - indicates "DTC memory not yet checked" , check DTC memory and rectify any faults.**
- **The DTC memory is not erased if, for example, the ignition is switched off between checking and erasing the DTC memory.**

- On display of Diagnostic Operation System VAS 5051A , touch "O.K." box in zone - **2** -.

As soon as the DTC memory has been erased, zone - **1** - displays the message "DTC memory erased".

- On display of Diagnostic Operation System VAS 5051A , touch box with <-- key.

End Output (function 06)

Requirements:

- DTC memory checked and erased, basic setting performed and coding checked --> **Climatronic Control Module J255, coding (function 07)**

NOTE:

- **The currently valid code transmitted by the Instrument Cluster Control Module J285 is displayed in the measuring value block (display group "019") --> Read Measuring Value Block (function 08).**

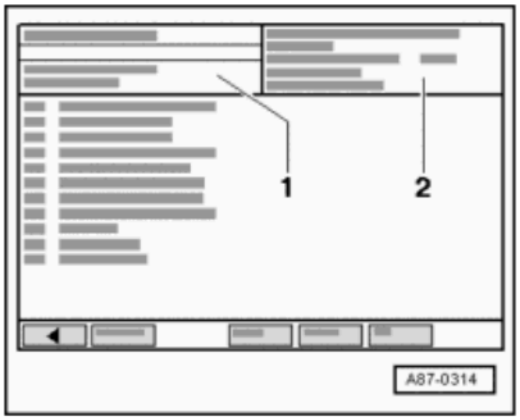

Fig. 18: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- Select function "06 - End of output".

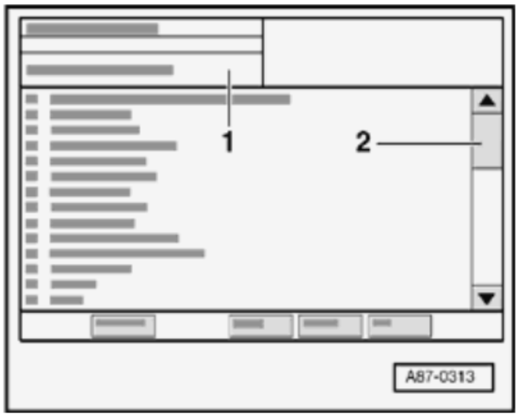

Fig. 19: Identifying Vehicle System Selection Prompt & "Scrolling" Bar
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Wait until this display (start menu) appears on Diagnostic Operation System VAS 5051A.
- Switch off ignition and disconnect diagnostic connector.

CLIMATRONIC CONTROL MODULE J255, CODING (FUNCTION 07)

Climatronic Control Module J255, coding (function 07)

NOTE:

- **For this vehicle, "basic coding" of the operating and display module, Climatronic Control Module J255 is performed during basic setting of the operating and display module, Climatronic Control Module J255 by the Instrument Cluster Control Module J285. The data are transmitted via the CAN-Bus comfort system to the operating and display module, Climatronic Control Module J255. The currently valid code is displayed in the**

measuring value block (display group "019") --> Read Measuring Value Block (function 08). The operating and display module, Climatronic Control Module J255 can only be properly coded if the Instrument Cluster Control Module J285 has been coded in the specified manner and adaptation performed Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.

- **Direct code entry in the operating and display module, Climatronic Control Module J255 is provided for certain items of equipment.**
- **If, for example, the Instrument Cluster Control Module J285 has been coded for the country version "Japan" , the air conditioner remains in "recirculated air mode" after switching the ignition off and on again if "recirculated air mode" had been set before switching off the ignition (display group "019") --> Read Measuring Value Block (function 08).**
- **With the "Audi Cabrio" , different settings are stored for closed and open convertible top in the operating and display module, Climatronic Control Module J255. On opening and closing the convertible top, the operating and display module, Climatronic Control Module J255 then automatically alters the setting to the value last set with convertible top closed or open.**

Code control module

NOTE:

- **Control modules can only be coded using testers in which a workshop number has been entered.**

- With the ignition switched off, connect Diagnostic Operation System VAS 5051A using, for example, Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A) to the 16-pin diagnostic socket in the vehicle --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.
- Switch ignition on.
- Use address word "08" to select A/C heater electronics --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.

Requirements:

- DTC memory checked --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** , all displayed faults eliminated and DTC memory erased
- Air conditioner switched on ("Auto" mode).

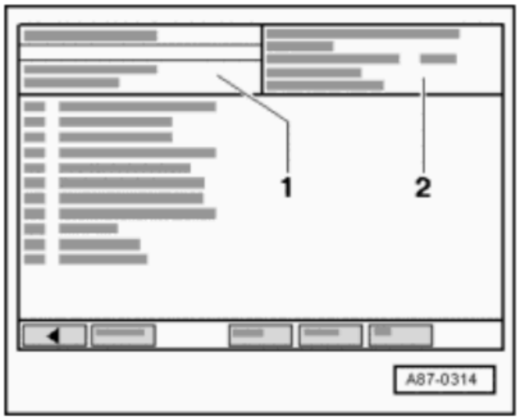

Fig. 20: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- Select function "07 - Coding control module".

Indicated on display of Diagnostic Operation System VAS 5051A :

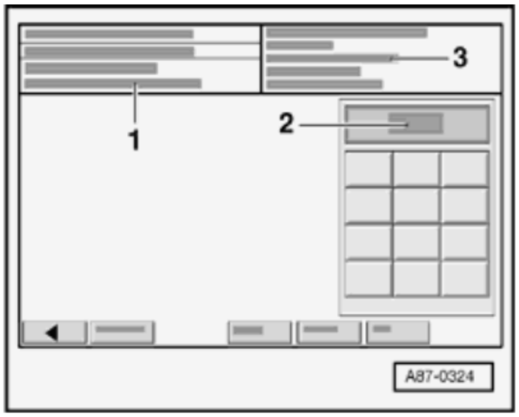

Fig. 21: Identifying Prompt For Entering Code Appears In Display Zone, Input Keypad Appears In Display Zone & Fourth/Fifth Line Of Display Zone
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Prompt for entering code appears in display zone - **1** -.
- Input keypad appears in display zone - **2** -.
- Fourth line of display zone - **3** - indicates currently valid code, with previous code in brackets.
- Fifth line of display zone - **3** - indicates workshop code entered in Diagnostic Operation System VAS 5051A.

- Code the operating and display module, Climatronic Control Module J255 in line with the optional extras installed and the vehicle model, coding table --> **Coding table**.
- Use keypad - **2** - to enter required code in line with coding table.

- Confirm entry by touching Q key in display zone - **2** -.

The following appears on the display of the Diagnostic Operation System VAS 5051A after a brief delay.

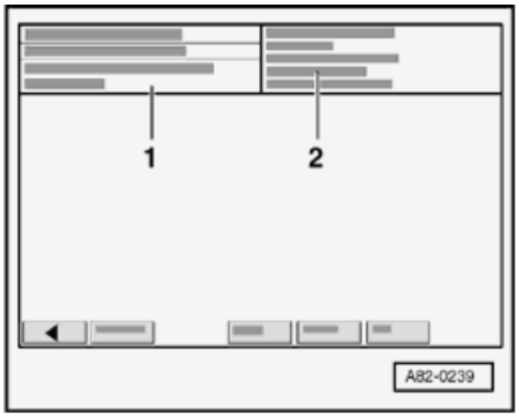

Fig. 22: Identifying Display Field Indicates "Vehicle System Coding Performed" & Indicates Control Unit Identification With New Code And Old Code In Brackets
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Vehicle system coding performed".
- Display field - **2** - indicates control unit identification with new code and old code in brackets.

NOTE:

- **Touch <-- key to return to selection program.**
- **If an incorrect code is entered, the DTC message "Function unknown or cannot be implemented at present" is displayed and the old code remains stored.**
- **At the factory (as-delivered condition for replacement part), the coding for the operating and display module, Climatronic Control Module J255 is currently "00000".**
- **The coding of the vehicle version sets the operating and display module, Climatronic Control Module J255 to the different models:**
- **The "basic configuration" is applicable to the Saloon, Avant and Coupe.**
- **On the Cabrio, the Heated Rear Window function is configured differently, the control characteristic curve accordingly modified and, with the convertible top open, control action is implemented via the vent temperature sensors (Left Vent Temperature Sensor G150 , Right Vent Temperature Sensor G151 etc.).**
- **If the operating and display module, Climatronic Control Module J255 is coded for a vehicle with Heated Windshield Z2 as optional extra, diagnosis and the Heated Windshield activation function are enabled.**
- **If Climatronic Control Module J255 has been coded as a vehicle equipped with "sunroof with solar cells" (Solar Cells C20), the following adjustments are performed at this time on the heating and A/C unit after ignition is**

switched off:

- Both Left Temperature Flap Motor V158 and Right Temperature Flap Motor V159 are set to the position "cold".
- Central Air Flap Motor V70 is set to the "air to instrument panel vents" position and the defroster flap is closed via Defroster Flap Motor V107 (air into footwells).
- Fresh air flap is opened (Air Flow Flap Motor V71) and recirculating air flap is closed (Recirculation Flap Motor V113).

Coding table

Code					Meaning
0					No assignment
	0				No assignment
		Vehicle version			
		0			Saloon, Avant (or Coupe)
		1			Cabrio
			Heated windshield		
			0		Not installed
			1		Installed
				Sun roof with Solar Cells	
				0	Not installed
				1	Installed

READ MEASURING VALUE BLOCK (FUNCTION 08)

Read Measuring Value Block (function 08)

NOTE:

- **For checking the vehicle speed signal, move the vehicle several meters at least at walking pace (more than 5 km/h) after switching on the ignition.**
- **For installations of components activated, refer to --> A/C system control and regulation components.**

- With the ignition switched off, connect Diagnostic Operation System VAS 5051A using, for example, Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A) to the 16-pin diagnostic socket in the vehicle --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.
- Switch on ignition or start engine.
- Set "Auto" mode on the operating and display module, Climatronic Control Module J255.
- Use address word "08" to select A/C heater electronics --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.

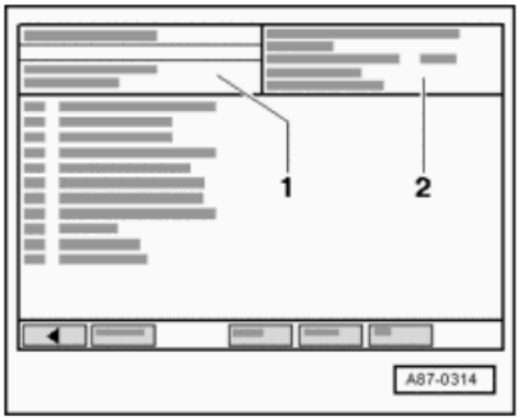

Fig. 23: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- check DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)**.
- Select function "08 - Reading measuring value block".

Indicated on display of Diagnostic Operation System VAS 5051A :

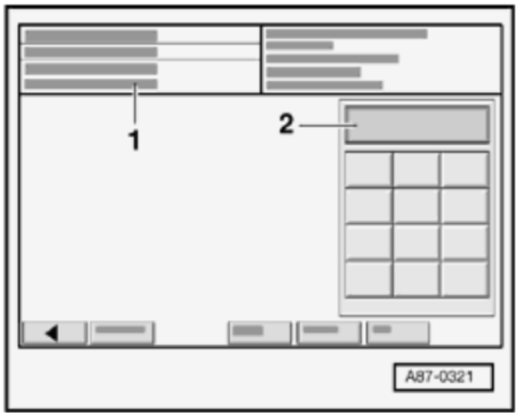

Fig. 24: Identifying Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Prompt for entering display group appears in display zone - **1** -.
- Input keypad appears in display zone - **2** -.

- Use input keypad in display zone - **2** - to enter desired display group (e.g. "001" or "01" for display group number "001") --> **Overview of selectable display group numbers** and confirm by touching Q key.

Indicated on display of Diagnostic Operation System VAS 5051A :

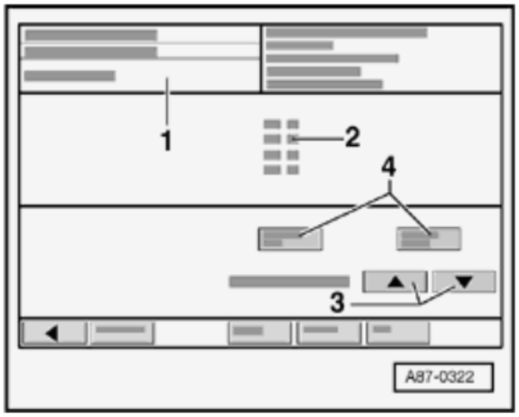

Fig. 25: Identifying Display Group Selected Appears In Zone & Values For Four Display Zones Appear In Zone
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display group selected appears in zone - **1** -.
- The values for the four display zones appear in zone - **2** - :

  - Value for display zone "1" appears on first line.
  - Values for respective display zones appear on second, third and fourth lines.
  - Line remains blank if a display zone is not used.

- Touching the keys - **3** - permits switching to a different display group.
- Touching the keys - **4** - permits switching to a different function (e.g. from "Reading measuring value block" to "Basic setting" and back again).

  - Enter display group number (list) --> **Overview of selectable display group numbers**.

Overview of selectable display group numbers

Display group number	Display field	Description	Display field
001	1	Control current for actuating A/C Compressor Regulator Valve N280 in amps	
	2	Activation for A/C Compressor Regulator Valve N280 in % ○ Ratio of activation signal	
	3	Signal from High Pressure Sensor G65 in % ○ Signal ratio as a	

Display group number	Display field	Description	Display field
		function of pressure in refrigerant circuit	
	4	Pressure in refrigerant circuit in bar ○ Calculated via ratio of signal from High Pressure Sensor G65 by operating and display module, Climatronic Control Module J255	
002	1 to 4	The last four compressor shutoff criteria which were active for more than 20 or 12 seconds	
003	1 to 4	Left Temperature Flap Motor V158	
004	1 to 4	Right Temperature Flap Motor V159	
005	1 to 4	Defroster Flap Motor V107	
006	1 to 4	Central Air Flap Motor V70	
007	1 to 4	Air Flow Flap Motor V71 ○ Left-hand drive vehicles ○ Not used on right-hand drive vehicles (control motor not installed)	
008	1 to 4	Recirculation Flap Motor V113	
009	1	Measuring value of Left Footwell Vent Temperature Sensor G261 in °C	
	2	Measuring value of Right Footwell Vent	

		Temperature Sensor G262 in °C	
	3	Measuring value of Left Vent Temperature Sensor G150 in °C	
	4	Measuring value of Right Vent Temperature Sensor G151 in °C	

Display group number	Display field	Description	Display field
010	1	Measuring value of Evaporator Vent Temperature Sensor G263 in °C	
	2	Measuring value of Fresh Air Intake Duct Temperature Sensor G89 in °C	
	3	Calculated value transmitted by Instrument Cluster Control Module J285 (filtered value) for currently valid ambient temperature in °C	
	4	Measured value transmitted by Instrument Cluster Control Module J285 (non-filtered value) of Outside Air Temperature Sensor G17 in °C	
011	1	Measuring value of Instrument Panel Interior Temperature Sensor G56 in °C ○ Installed in operating and display module, Climatronic Control Module J255	
	2	Speed of Interior Temperature Sensor Fan V42	

		○ Installed in operating and display module, Climatronic Control Module J255	
	3	Coolant temperature in ° C transmitted by Instrument Cluster Control Module J285	
	4	Activation for output for idling speed increase ○ From operating and display module, Climatronic Control Module J255 to relevant engine control module ○ Display: "On" or "Off"	

Display group number	Display field	Description	Display field
012	1	Current engine speed in RPM transmitted by Instrument Cluster Control Module J285	
	2	Vehicle speed in km/h transmitted by Instrument Cluster Control Module J285	
	3	Status of torque required for compressor operation displayed in zone "4"	
	4	Engine torque in Nm required for compressor operation calculated by operating and display module, Climatronic Control Module J255	

Display group number	Display field	Description	Display field
013	1	Activation for Fresh Air Blower V2 in %	

		○ Via Fresh Air Blower Control Module J126	
	2	Speed of Fresh Air Blower V2 in RPM ○ Calculated via ratio of signal from Fresh Air Blower Control Module J126 by operating and display module, Climatronic Control Module J255	
	3	Voltage transmitted by Instrument Cluster Control Module J285 at terminal "58d" in % or V	
	4	Voltage transmitted by Instrument Cluster Control Module J285 at terminal "58s" in % or V	
014	1	Activation for Coolant Fan V7 in % ○ From operating and display module, Climatronic Control Module J255 to relevant engine control module ○ Engine control unit activates Coolant Fan Control (FC) Control Module J293	and
	2	Feedback from relevant engine control module for activation of Coolant Fan V7 in % to Coolant Fan Control (FC)Control Module J293	

		○ Only used on vehicles with operating and display module, Climatronic Control Module J255 as of hardware/software version "0203"	
	3	Signal from Air Quality Sensor G238	
	4	Request for fresh or recirculated-air mode	

Display group number	Display field	Description	Display field
015	1	Activation for Heated Rear Window Z1 ○ Display: "On" or "Off"	
	2	Signal for activation of Heated Windshield Z2 ○ Only applicable to vehicles with Heated Windshield Z2 as optional extra	
	3	Activation for supplementary heater ○ Not applicable in USA	
	4	Position of convertible top on Audi Cabrio ○ Display only applicable to Cabrio ○ Display: "Open" or "Closed"	
016	1	Measuring value of Sunlight Photo Sensor G107 ○ Measured value for	

		left side in Volts	
	2	Measuring value of Sunlight Photo Sensor G107 ○ Measured value for left side in Watts per m^2 ○ Calculated by operating and display module, Climatronic Control Module J255 by way of measured voltage	
	3	Measuring value of Sunlight Photo Sensor G107 ○ Measured value for right side in Volts	
	4	Measuring value of Sunlight Photo Sensor G107 ○ Measured value for right side in Watts per m^2 ○ Calculated by operating and display module, Climatronic Control Module J255 by way of measured voltage	

Display group number	Display field	Description	Display field
017	1	Transmitted by Instrument Cluster Control Module J285 , voltage at terminal "15" ○ Display: "On" or "Off"	
	2	Transmitted by	

		Instrument Cluster Control Module J285 , voltage at terminal "75" ○ Display: "On" or "Off"	
	3	Voltage from terminal "75" to operating and display module, Climatronic Control Module J255 ○ Display: "On" or "Off"	
	4	Voltage measured by operating and display module, Climatronic Control Module J255 at terminal "30" in V	
018	1	Standing time transmitted by Instrument Cluster Control Module J285 ○ Signal for "ignition off period" in hours ○ Time since ignition last switched off	
	2	Ignition key assignment transmitted by Instrument Cluster Control Module J285	
	3	Windscreen wiper ON signal ○ Wipe/wash or wipe mode ○ Transmitted by Steering Column Electronic Systems Control Module J527	
	4	Duty cycle for operating status of Fresh Air Blower V2 in % ○ Calculated and	

		transmitted by Fresh Air Blower Control Module J126	

Display group number	Display field	Description	Display field
019	1	Coding transmitted by Comfort System Central Control Module J393 and Instrument Cluster Control Module J285 (code "1")	
	2	Coding transmitted by Instrument Cluster Control Module J285 (code "2")	
	3	Display field not used	
	4	Display field not used	
020	1	Position in % of thumb wheel for Drivers Seat Heating Element installed in operating and display module, Climatronic Control Module J255 ○ Not applicable to vehicles with no "heated seat cushion" optional extra	
	2	Measured actual temperature of driver seat cushion heater element in °C ○ Not applicable to vehicles with no "heated seat cushion" optional extra	
	3	Specified temperature of driver seat cushion heater element in °C ○ Not applicable to vehicles with no	

		"heated seat cushion" optional extra	
	4	Activation for driver seat cushion heater element ○ Display: "On" or "Off" ○ Not applicable to vehicles with no "heated seat cushion" optional extra	

Display group number	Display field	Description	Display field
021	1	Position in % of thumb wheel for Front Passengers Seat Heating Element installed in operating and display module, Climatronic Control Module J255 ○ Not applicable to vehicles with no "heated seat cushion" optional extra	
	2	Measured actual temperature of front passenger seat cushion heater element in °C ○ Not applicable to vehicles with no "heated seat cushion" optional extra	
	3	Specified temperature of front passenger seat cushion heater element in °C ○ Not applicable to vehicles with no "heated seat	

		cushion" optional extra	
	4	Activation for front passenger seat cushion heater element on or off ○ Display: "On" or "Off" ○ Not applicable to vehicles with no "heated seat cushion" optional extra	

Display group number	Display field	Description	Display field
026 and 027	1 to 4	Ambient conditions under which pressure in refrigerant circuit was not OK ○ Signal from High Pressure Sensor G65 outside permissible range	
028	1 to 4	Display fields not used ○ Operating and display unit, Climatronic Control Module J255 up to part No. with index "AH" ○ Installed on vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)	
		Display of altered settings in the adaptation channels listed	

		○ Operating and display unit, Climatronic Control Module J255 with part No. as of index "AJ" ○ Installed on vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)	
081	1	Operating and display unit, Climatronic Control Module J255 up to hardware/software version "0610" ○ Display field not used	
		Operating and display unit, Climatronic Control Module J255 as of hardware/software version "0711" ○ Vehicle VIN transmitted by Instrument Cluster Control Module J285	
	2 to 4	Display fields not used ○ Intended for assembly and serial number of operating and display module, Climatronic Control Module J255 (introduction not yet finalized,	

		No service relevance at present)	

Display group number	Display field	Description	Display field
125	1	Information from Instrument Cluster Control Module J285 ○ The information is transmitted on the CAN-Bus comfort system	
	2	Information from Comfort System Central Control Module J393 ○ The information is transmitted on the CAN-Bus comfort system	
	3	Information from Vehicle Electrical System Control Module J519 ○ The information is transmitted on the CAN-Bus comfort system	
	4	Information from Steering Column Electronic Systems Control Module J527 ○ The information is transmitted on the CAN-Bus comfort system	
126	1	Information from Auxiliary Heater Control Module J364 ○ Not applicable in USA	
	2	Information from Convertible Top Control	

		Module J256 ○ The information is transmitted on the CAN-Bus comfort system ○ Only provided for Cabrio	

Display group number	Display field	Description	Display field
126	3	Display field not used ○ Operating and display unit, Climatronic Control Module J255 up to part No. with index "G"	
		Information from Instrument Cluster Control Module J285 ○ Only displayed by operating and display modules, Climatronic Control Module J255 with part No. as of index "H" ○ The information is transmitted on the CAN-Bus comfort system	
	4	Operating status of CAN-Bus comfort system	

Display groups not used at present for service purposes or not assigned

Display group number	Display field	Description	Display field
023 to 025	1 to 4	Display fields not used ○ These display groups cannot be called up by service personnel	

029 to 079	1 to 4	Display fields not used ◦ These display groups cannot be called up by service personnel	
080 and 082	1 to 4	Display groups currently not used for service purposes ◦ Display of manufacturer information for operating and display module, Climatronic Control Module J255	--> **Display groups currently not to be used by dealerships**
083 to 124	1 to 4	Display fields not used ◦ These display groups cannot be called up by service personnel	
127	1 to 4	Version numbers of operating and display module, Climatronic Control Module J255	--> **Display groups currently not to be used by dealerships**

Measuring value blocks from "001" to "010"

Display group "001"

A/C Compressor Regulator Valve N280 and High Pressure Sensor G65

NOTE:

- **In the event of a compressor shutoff condition , the A/C Compressor Regulator Valve N280 cannot be activated even during Output Diagnostic Test Mode (DTM) diagnosis (--> Output Diagnostic Test Mode (DTM) (function 03)).**
- **If no pressure signal from the High Pressure Sensor G65 is detected, the A/C Compressor Regulator Valve N280 must not be activated.**

Display field	Meaning	Remarks
1	Measured control current for A/C Compressor Regulator Valve	• Current flowing via A/C Compressor Regulator

	N280 (in amps)	Valve N280
	• Display = less than 0.050 A ○ Compressor switched off	
	• Display = 0.300 A to 0.650 A (up to 0.8 A) ○ Compressor in control mode; control current is governed by cooling output required	

NOTE:

- **Display field "1" indicates the current flowing via the A/C Compressor Regulator Valve N280.**
- **The current is calculated by the operating and display module, Climatronic Control Module J255 and is governed by the required cooling output, the operating mode selected (set) for the operating and display module, Climatronic Control Module J255 and the electrical system voltage. The regulating valve can however only operate reliably if there is a specified minimum current flow (0.3 A for the regulating valves installed at present).**
- **Full A/C Compressor Regulator Valve N280 activation results in a maximum current of at present approx. 0.65 A (up to 0.8 A) depending on vehicle electrical system voltage and the version of the operating and display module, Climatronic Control Module J255 (calculated, regulated and limited by operating and display module, Climatronic Control Module J255).**
- **If the pressure in the refrigerant circuit (display zones "3" and "4") does not change when the engine is running despite the A/C Compressor Regulator Valve N280 being activated with maximum current, check the pulley or the drive unit at the compressor. The compressor must be driven (if the overload safeguard has been triggered, the pulley turns, for example, but the compressor is not driven) --> Belt pulley/drive unit of compressor, replacing.**

Display field	Meaning	Remarks
2	Duty cycle for activation of A/C Compressor Regulator Valve N280 (in %)	• Time component of A/C Compressor Regulator Valve N280 activation
	• Display = 0% ○ Compressor switched off	
	• Display = 30 to 40% to 100%	

	○ Compressor in control mode, activation time is governed by cooling output required, operating mode selected and electrical system voltage. The minimum activation time is however that required to achieve a mean current flow of 0.3 A and the maximum time is such that a mean current of 0.65 A (0.8 A) is not exceeded.	

NOTE:

- **The duty cycle for the period during which current can actually flow is indicated in display zone "2".**
- **The operating and display module, Climatronic Control Module J255 employs a frequency of 500 Hz (500 Hertz = 500 activation pulses per second). The duty cycle indicates the proportion of the ON time per pulse.**
- **The activation signal can be checked for example using the Diagnostic Operation System VAS 5051A ("Measurement" function).**
- **The duty cycle is selected by the operating and display module, Climatronic Control Module J255 such that the Evaporator Vent Temperature Sensor G263 attains the specified evaporator temperature, which is influenced by various factors.**
- **If a malfunction is detected at the Evaporator Vent Temperature Sensor G263 , the operating and display module, Climatronic Control Module J255 switches to emergency operation and the A/C Compressor Regulator Valve N280 is then only activated with a maximum control current specified by the software of the operating and display module, Climatronic Control Module J255. The maximum control current is governed by the version of the operating and display module, Climatronic Control Module J255 and may be between approx. 0.3 A and 0.5 A for the operating and display modules, Climatronic Control Module J255 installed at present (the cooling output of the air conditioner is thus reduced and the cooling effect is no longer sufficient at higher temperatures).**

Display field	Meaning	Remarks
3	Ratio for pressure signal from High Pressure Sensor G65 (in %)	• Time component of positive signal from High Pressure Sensor G65
	• Display = 0 to 5% ○ Open circuit in wiring	

	between High Pressure Sensor G65 and operating and display module, Climatronic Control Module J255 ○ Open circuit in power supply or Ground (GND) connection to High Pressure Sensor G65 ○ High Pressure Sensor G65 defective	
	• Display = 5% to 12 % ○ Insufficient pressure in refrigerant circuit (system empty) ○ High Pressure Sensor G65 defective	
	• Display = 12 % to 87.5% ○ Pressure in refrigerant circuit in permissible range	• If a ratio of less than 16.5 % is displayed at an ambient temperature above 20 °C, the measured value of the High Pressure Sensor G65 is not OK or there is not enough refrigerant in the circuit
	• Display = greater than 87.5 to 90% ○ Pressure in refrigerant circuit too high ○ Activation for Coolant Fan V7 not OK ○ High Pressure Sensor G65 defective ○ Radiator and/or condenser contaminated ○ Malfunction in refrigerant circuit	
	• Display = 90 to 100%	

	○ Short to positive (or Ground (GND)) in wiring between High Pressure Sensor G65 and operating and display module, Climatronic Control Module J255 ○ Open circuit in power supply or Ground (GND) connection to High Pressure Sensor G65 ○ High Pressure Sensor G65 defective	

NOTE:

- **The ratio for the period during which the signal is actually applied is indicated in display zone "3".**
- **The operating and display module, Climatronic Control Module J255 uses the ratio to calculate the pressure in the refrigerant circuit. The calculated pressure is indicated in display zone "4".**
- **If the ratio is less than 12 % (corresponding to approx. 1.8 bar absolute pressure) and greater than 87.5% (corresponding to approx. 32 bar absolute pressure), the operating and display module, Climatronic Control Module J255 does not switch on the compressor (the A/C Compressor Regulator Valve N280 is not activated). The compressor is only re-activated once the ratio exceeds 15 % (corresponding to absolute pressure of 2.6 bar) or drops below 48% (corresponding to absolute pressure of 16 bar).**
- **To prevent abrupt compressor shutoff because of excessive pressure in the refrigerant circuit or excessive coolant temperature, the compressor output is reduced by the operating and display module, Climatronic Control Module J255 :**
- **- As soon as the pressure in the refrigerant circuit exceeds 30 bar (absolute) (full compressor output is not released again until pressure has dropped below 16 bar)**
- **- As soon as the coolant temperature exceeds 115 °C (full shutdown at 118 °C)**
- **Depending on the ratio, the operating and display module, Climatronic Control Module J255 transmits a signal via the CAN-Bus comfort system to the relevant engine control module, thus causing it to act on the Coolant Fan Control (FC)Control Module J293 to switch the Coolant Fan V7.**
- **At absolute pressure, 0 bar corresponds to an absolute vacuum. Normal ambient pressure thus corresponds to roughly 1 bar absolute. On the scales of most pressure gauges, 0 bar corresponds to an absolute**

pressure of one bar (can be seen from "-1" mark below "0").

- **The pressure in the refrigerant circuit and thus the ratio are governed by various factors. As a general rule, however, the pressure will not exceed 20 bar (absolute) with maximum compressor output and an ambient temperature of 20 to 25 °C. Under extreme usage conditions (e.g. in hot countries with high ambient temperatures, "stop and go traffic" and high relative humidity), the extremely high cooling output involved may also result in pressures of up to 30 bar (absolute).**
- **The High Pressure Sensor G65 operates with a frequency of 50 Hz (50 Hertz = 50 activation pulses per second). The signal ratio indicates the proportion of the ON time per pulse.**
- **The activation signal can be checked for example using the Diagnostic Operation System VAS 5051A ("Measurement" function) (Checking signal from High Pressure Sensor G65).**
- **The signal generated by the High Pressure Sensor G65 is also used to control the engine (the torque required to drive the compressor is governed by the pressure in the refrigerant circuit). Depending on the engine control module version, the signal is displayed as signal ratio in the measuring value block of the relevant engine control module.**
- **The signal transmitted at a refrigerant circuit pressure of approx. 5 to 6 bar absolute corresponds to a signal ratio of approx. 22%, which is achieved with the compressor not running, at an ambient temperature of 20 °C and with the refrigerant circuit properly charged.**

Display field	Meaning	Remarks
4	Pressure in refrigerant circuit (in bar absolute) • Display = less than 2.6 bar ○ Insufficient pressure in refrigerant circuit (system empty) ○ High Pressure Sensor G65 defective	• The pressure is calculated via the signal ratio indicated in display zone "3" by the operating and display module, Climatronic Control Module J255.
	• Display = 2.6 bar to 29 bar ○ Pressure in refrigerant circuit in permissible range	• If a pressure of less than 4 bar is displayed at an ambient temperature above 20 °C, the measured value of the High Pressure Sensor G65 is not OK or there is not enough refrigerant in the circuit
	• Display = greater than 29	

	bar (also for brief periods) ○ Pressure in refrigerant circuit too high ○ Activation for Coolant Fan V7 not OK ○ High Pressure Sensor G65 defective ○ Radiator and/or condenser contaminated ○ Malfunction in refrigerant circuit	

NOTE:

- **Also observe the notes on display zone "3".**
- **By way of the signal ration (display zone "3"), the operating and display module, Climatronic Control Module J255 calculates the pressure in the refrigerant circuit.**
- **If the refrigerant circuit has been properly charged, the pressure settles at 2.6 bar at a temperature of -3 °C. To avoid a fault being stored at low temperatures, the operating and display module, Climatronic Control Module J255 only recognizes a fault in the refrigerant circuit at pressures of less than 1.8 bar (attained at -12 °C). The High Pressure Sensor G65 is however no longer checked at this temperature.**
- **If the pressure in the refrigerant circuit (display zones "3" and "4") does not change when the engine is running despite the A/C Compressor Regulator Valve N280 being activated with maximum current, check the pulley or the drive unit at the compressor. The compressor must be driven (if the overload safeguard has been triggered, the pulley turns, for example, but the compressor is not driven) --> Belt pulley/drive unit of compressor, replacing.**

Display group "002"

Last four compressor shutoff criteria

Display field	Meaning	Remarks
1	Current, valid compressor shutoff condition	- Remarks
2	Last compressor shutoff condition	
3	Last but one compressor shutoff condition	
4	Third last compressor shutoff	

	condition	

NOTE:

- **In the event of several simultaneous compressor shutoff criteria (display zone "1"), either the shutoff criteria are displayed alternately or the only shutoff condition displayed is the one given the highest priority by the operating and display module, Climatronic Control Module J255.**
- **The current compressor shutoff criteria are indicated in display zone "1".**
- **The only shutoff criteria stored in display zones "2" , "3 " and "4" are those marked with a * . They are however only stored if they were active for more than 20 seconds (shutoff condition "12" is already stored after 12 seconds).**
- **If the compressor is shut off again and display zones "2" to "4 " in this display group do not indicate any compressor shutoff condition, additionally check the display in display groups "026" and "027".**
- **If, with an operating and display module, Climatronic Control Module J255 up to hardware/software version "0610" , compressor shutoff condition "3" (pressure in refrigerant circuit too low) occurs, the operating and display module, Climatronic Control Module J255 switches automatically to "ECON" mode and No fault is stored. This situation is stored as being a malfunction as of hardware/software version "0711".**
- **In the case of an operating and display module, Climatronic Control Module J255 up to hardware/software version "0610" it may not be possible to erase the compressor shutoff condition stored in display zones "2" to "4".**

Interpretation of compressor shutoff condition for display zones "1 to 4" of display group "002"

NOTE:

- **The numbers not listed (e.g. "13") are not assigned a compressor shutoff condition at present.**

Display field	Compressor shutoff condition code	Meaning	Malfunction cause/corrective action
1 to 4	0	Compressor on • No compressor shutoff condition detected	○ If the compressor does not switch on, check the DTC memory --> **Diagnostic Trouble Code**

			(DTC) Memory, checking (function 02) and perform Output Diagnostic Test Mode (DTM) diagnosis --> **Output Diagnostic Test Mode (DTM) (function 03)** and electrical checks --> **Automatic Climate Control System, electrical testing**.
	1 *	Compressor off - Pressure in refrigerant circuit has been or is too high	○ Ambient conditions under which pressure was last not OK
	2	Reduced compressor output - The relevant engine control module requests the operating and display module, Climatronic Control Module J255 to reduce the compressor output. - The operating and display module, Climatronic Control Module J255 regulates the current for the A/C Compressor Regulator Valve N280 to approx. 300 mA.	- The engine control module has established that the torque for the air conditioner compressor must be reduced to the lowest level still possible for better

			acceleration or because of a malfunction in the engine management system. ○ Check DTC memory of engine control unit "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.

Display field	Compressor shutoff condition code	Meaning	Malfunction cause/corrective action
1 to 4	3 *	Compressor off - Pressure in refrigerant circuit has been or is too low	○ Corrective action --> **Diagnostic Trouble Code (DTC) table** and Electrical checks --> **Automatic Climate Control System, electrical testing** ○ Current measured value of High Pressure Sensor G65
	4	Compressor off - A fault preventing activation of the compressor has been entered in the DTC memory of the	○ Corrective action --> **Diagnostic Trouble Code (DTC) table**

		operating and display module, Climatronic Control Module J255.	
	5	Compressor off	
		• Engine speed less than 300 RPM	○ Start engine
		• No engine speed detected	• No information received via CAN-Bus comfort system ○ check DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** • No engine speed signal output by engine control unit or Instrument Cluster Control Module J285 ○ Check engine speed --> ○ **90 INSTRUMENTS** ○ **90 INSTRUMENTS** for ELECTRICAL EQUIPMENT, CABRIOLET

Display field	Compressor shutoff condition code	Meaning	Malfunction cause/corrective action
1 to 4	6	Compressor off	
		• Compressor switched off by way of ECON button of operating and display module, Climatronic Control Module J255	○ Switch on compressor
		• After replacement of operating and display module, Climatronic Control Module J255 , "Basic setting" was not performed	○ Perform basic setting for air conditioner as specified --> **Basic**

			Setting (function 04).
	7	Compressor off • Air conditioner switched off by way of Off button of operating and display module, Climatronic Control Module J255 ○ Vehicle with no Air Quality Sensor G238 • Air conditioner switched off by way of Minus button for Fresh Air Blower of operating and display module, Climatronic Control Module J255 ○ Vehicle with Air Quality Sensor G238	○ Switch on air conditioner (e.g. by way of Auto button of operating and display module, Climatronic Control Module J255)

Display field	Compressor shutoff condition code	Meaning	Malfunction cause/corrective action
1 to 4	8	Compressor off	
		• Vehicle with no Air Quality Sensor G238 • Vehicle with Air Quality Sensor G238 , however recirculated-air mode not requested by Air Quality Sensor G238 or "automatic air recirculation" function deactivated. ○ Measured ambient temperature less than 5 °C ○ Measured ambient temperature had been less than 2 °C and has not risen above 5 °C since	• Ambient temperature less than 5 ° C ○ Move vehicle into a heated area for checking • The Instrument Cluster Control Module J285 or the Fresh Air Intake Duct Temperature Sensor G89 is supplying incorrect values

			○ Check the measured values of the Outside Air Temperature Sensor G17 (transmitted via CAN-Bus comfort system by Instrument Cluster Control Module J285) and the Fresh Air Intake Duct Temperature Sensor G89 (display group "010")
		• Vehicle with Air Quality Sensor G238 , "automatic air recirculation" function activated and recirculated-air mode requested by Air Quality Sensor G238 ○ Measured ambient temperature less than -8 ° C ○ Measured ambient temperature had been less than -8 °C and has not risen above -5 °C since	• Ambient temperature less than -5 °C • Ambient temperature less than 5 ° C and engine cold ○ Move vehicle into a heated area for checking • The Instrument Cluster Control Module J285 or the Fresh Air

			Intake Duct Temperature Sensor G89 is supplying incorrect values ○ Check the measured values of the Outside Air Temperature Sensor G17 (transmitted via CAN-Bus comfort system by Instrument Cluster Control Module J285) and the Fresh Air Intake Duct Temperature Sensor G89 (display group "010")

Display field	Compressor shutoff condition code	Meaning	Malfunction cause/corrective action
1 to 4	9 *	Compressor off - Electrical Equipment voltage is or has been less than 9.5 V with engine running	- Voltage dips in power supply to operating and display module, Climatronic Control Module J255 or to Instrument

			Cluster Control Module J285
	10 *		- Electrical Equipment voltage (at connector "D" contact "12") too low or fault in Ground (GND) connection to operating and display module, Climatronic Control Module J255 --> **Diagnostic Trouble Code (DTC) table** ○ Use wiring diagram to check power supply ○ Corrective action --> **Diagnostic Trouble Code (DTC) table** and Electrical checks --> **Automatic Climate Control System, electrical**

			testing

NOTE:

- **Depending on the version of the operating and display module, Climatronic Control Module J255 , code "9" or "10" is displayed for this compressor shutoff condition if the electrical system voltage is too low.**

Display field	**Compressor shutoff condition code**	**Meaning**	**Malfunction cause/corrective action**
1 to 4	11 *	Compressor off • Engine temperature too high	• The Instrument Cluster Control Module J285 has detected an excessively high engine temperature (coolant temperature greater than 118 °C) and transmitted this via the CAN-Bus comfort system to the operating and display module, Climatronic Control Module J255 --> ○ **90 INSTRUMENTS** ○ **90 INSTRUMENTS** for ELECTRICAL EQUIPMENT, CABRIOLET
	12 *	Compressor off • Air conditioner compressor shutoff currently active (with display in zone "1") • Air conditioner compressor shutoff was active for more than 12 seconds (with display in zones "2" , "3" or "4")	• The engine control module has switched off the air conditioner compressor for a brief period (e.g. on vehicle acceleration) • The engine control module has switched off the air conditioner compressor because of a malfunction. ○ Check DTC memory of engine control unit

			"Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.
	13	Not used at present	

Display field	Compressor shutoff condition code	Meaning	Malfunction cause/corrective action
1 to 4	14 *	Compressor off • In the course of the current driving cycle, the High Pressure Sensor G65 has supplied a pressure signal with a ratio greater than 87.5% (pressure too high) at least 30 times.	• Loose contact in power supply or Ground (GND) connection to High Pressure Sensor G65 • Loose contact in wiring between High Pressure Sensor G65 and operating and display module, Climatronic Control Module J255 • Fault at High Pressure Sensor G65 or in refrigerant circuit • Problem with activation of Coolant Fan V7 ○ DTC table, --> **Diagnostic Trouble Code (DTC) table** and Electrical checks
	15	Compressor off • The temperature measured by the Evaporator Vent Temperature Sensor G263 is less than 2 °C (only displayed	• The air temperature in the area of the evaporator is less than 2 °C

		in zone "1")	○ Check measured value of Evaporator Vent Temperature Sensor G263 (display group "007") , ○ If the sensor measured value is OK and the temperature drops below 2 °C with the compressor in operation, check activation of A/C Compressor Regulator Valve N280 --> **Output Diagnostic Test Mode (DTM) (function 03)** (Output Diagnostic Test Mode (DTM) diagnosis) and Electrical checks --> **Automatic Climate Control System, electrical testing**. ○ If activation of the A/C Compressor Regulator Valve N280 is OK, there is a malfunction in the refrigerant circuit --> **87 - AIR CONDITIONING**

Display group "003"

Left Temperature Flap Motor V158

Display field	Meaning	Remarks
1	Actual feedback value of Left	• Display value greater than

	Temperature Flap Potentiometer/Actuator G220 (in Left Temperature Flap Motor V158)	"9" and less than "251" • Maximum permissible deviation "3" units from specified feedback value (only in range greater than "70" but less than "190")
2	Specified feedback value for Left Temperature Flap Potentiometer/Actuator G220 (calculated by operating and display module, Climatronic Control Module J255)	• Display range "10 to 245"
3	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Left Temperature Flap Potentiometer/Actuator G220 with control motor set to "Cooling stop" (temperature flap routes air flow past heater core)	• Display value greater than "9" and less than "71"
4	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Left Temperature Flap Potentiometer/Actuator G220 with control motor set to "Heating stop" (temperature flap routes air flow through heater core)	• Display value greater than "189" and less than "246"

NOTE:

- **If the feedback value in display zone "1" is less than "5 " (short circuit) or greater than "250" (open circuit), perform Electrical checks --> Automatic Climate Control System, electrical testing.**
- **The actual feedback value (currently between "10" and "70" as well as between "190 " and 245) is specified as permissible tolerance range for the control motor or flap stop in the operating and display module, Climatronic Control Module J255.**
- **If a value greater than or less than the permissible adaptation value (learned value) is determined during basic setting, the fault "Adaptation limit exceeded" is entered in the DTC memory and a substitute value is displayed in the measuring value block (display zones "3" and "4") for this control motor (currently "30" for lower stop and "220" for upper stop).**
- **If the values displayed in zone "3" or "4" are outside the permissible range, refer to --> Diagnostic Trouble Code (DTC) table.**

- **If a fault at the integrated potentiometer is established for one or more control motors, the temperature flap control motors are activated on the basis of the values measured by the outflow temperature sensors. In the event of a malfunction, all other control motors are activated by the operating and display module, Climatronic Control Module J255 by way of an emergency operation program stored in this (time control).**

Display group "004"

Right Temperature Flap Motor V159

Display field	Meaning	Remarks
1	Actual feedback value of Right Temperature Flap Potentiometer/Actuator G221 (in Right Temperature Flap Motor V159)	• Display value greater than "9" and less than "251" • Maximum permissible deviation "3" units from specified feedback value (only in range greater than "70" but less than "190")
2	Specified feedback value for Right Temperature Flap Potentiometer/Actuator G221 (calculated by operating and display module, Climatronic Control Module J255)	• Display range "10 to 245"
3	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Right Temperature Flap Potentiometer/Actuator G221 with control motor set to "Cooling stop" (temperature flap routes air flow past heater core)	• Display value greater than "9" and less than "71"
4	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Right Temperature Flap Potentiometer/Actuator G221 with control motor set to "Heating stop" (temperature flap routes air flow through heater core)	• Display value greater than "189" and less than "246"

NOTE:

- **The notes on display group "003" also apply to this display group and**

should be observed if necessary.

Display group "005"

Defroster Flap Motor V107

Display field	Meaning	Remarks
1	Actual feedback value of Defroster Flap Motor Position Sensor G135 (in Defroster Flap Motor V107)	• Display value greater than "9" and less than "251" • Maximum permissible deviation "3" units from specified feedback value (only in range greater than "70" but less than "190")
2	Specified feedback value for Defroster Flap Motor Position Sensor G135 (calculated by operating and display module, Climatronic Control Module J255)	• Display range "10 to 165" ○ The "Upper stop" is not reached in control mode; the flap is not moved as far as the stop even in defrost mode.
3	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Defroster Flap Motor Position Sensor G135 with control motor set to "Lower stop" (defroster flap closed)	• Display value greater than "9" and less than "71"
4	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Defroster Flap Motor Position Sensor G135 with control motor set to "Upper stop" (defroster flap open)	• Display value greater than "189" and less than "246"

NOTE:

- **At present, the defroster flap is not completely opened even in "Defrost mode". This results in some of the air always being routed to the other vents. The upper specified feedback value displayed is thus "145 to 160".**
- **The notes on display group "003" also apply to this display group and should be observed if necessary.**

Display group "006"

Central Air Flap Motor V70

Display field	Meaning	Remarks
1	Actual feedback value of Central Flap Motor Position Sensor G112 (in Central Air Flap Motor V70)	• Display value greater than "9" and less than "251" • Maximum permissible deviation "3" units from specified feedback value (only in range greater than "70" but less than "190")
2	Specified feedback value for Central Flap Motor Position Sensor G112 (calculated by operating and display module, Climatronic Control Module J255)	• Display range "10 to 245"
3	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Central Flap Motor Position Sensor G112 with control motor set to "Lower stop" (central and footwell flap closed, air flow is routed to defroster flap)	• Display value greater than "9" and less than "71"
4	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Central Flap Motor Position Sensor G112 with control motor set to "Upper stop" (central flap open, footwell flap closed, air flow is routed to instrument panel vents)	• Display value greater than "189" and less than "246"

- The following air conditioner operating statuses (and all intermediate settings) can be selected via the levers installed to the flaps depending on the position of the control motor:

  - Footwell and central flap closed = Defrost mode (air to windshield)
  - Footwell flap open and central flap closed = Air to footwell (feedback value in display zones "1" and "2" between "110" and "150").
  - Footwell flap closed and central flap open = Air from instrument panel vents

NOTE:

- **The notes on display group "003" also apply to this display group and should be observed if necessary.**

Display group "007"

Air Flow Flap Motor V71

Display field	Meaning	Remarks
1	Actual feedback value of Back Pressure Flap Motor Position Sensor G113 (in Air Flow Flap Motor V71)	• Display value greater than "9" and less than "251" • Maximum permissible deviation "3" units from specified feedback value (in range greater than "10" but less than "190")
2	Specified feedback value for Back Pressure Flap Motor Position Sensor G113 (calculated by operating and display module, Climatronic Control Module J255)	• Display range "10 to 245"
3	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Back Pressure Flap Motor Position Sensor G113 with control motor set to "Lower stop" (air flow/fresh-air flaps closed, recirculated-air mode)	• Display value greater than "9" and less than "71"
4	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Back Pressure Flap Motor Position Sensor G113 with control motor set to "Upper stop" (air flow/fresh-air flaps open)	• Display value greater than "189" and less than "246"

- The following air conditioner operating statuses (and all intermediate settings) can be selected via the levers installed to the flaps depending on the position of the control motor:

  - Air flow/fresh-air flaps closed and recirculated-air flap open = recirculated-air mode.
  - Air flow/fresh-air flaps open and recirculated-air flap closed = fresh-air mode.
  - Air flow/fresh-air flaps partially closed and recirculated-air flap closed = Air flow mode (feedback value in display zones "1" and "2" in range between approx. "110" and "170").

NOTE:

- **With the vehicle stationary, the "air flow mode" setting is only attained during Output Diagnostic Test Mode (DTM) diagnosis.**

- **This control motor is used to activate the air flow/fresh-air flaps.**
- **This control motor is not installed on right-hand drive vehicles and this display group can therefore be ignored. On right-hand drive vehicles, the fresh-air flaps are moved by the Recirculation Flap Motor V113.**
- **The position of the air flow/fresh-air flaps is program-controlled in air flow mode. The flaps are closed as of approx. 80 km/h depending on vehicle speed, Fresh Air Blower speed, the selected and actually measured temperatures and the mode selected at the operating and display module, Climatronic Control Module J255. The air flow/fresh-air flaps are however not completely closed in air flow mode (they always remain open far enough to maintain the necessary air throughput).**
- **The notes on display group "003" also apply to this display group and should be observed if necessary.**

Display group "008"

Recirculation Flap Motor V113

Display field	Meaning	Remarks
1	Actual feedback value of Recirculation Flap Motor Position Sensor G143 (in Recirculation Flap Motor V113)	• Display value greater than "9" and less than "251" • Maximum permissible deviation "3" units from specified feedback value (in range greater than "50" but less than "200")
2	Specified feedback value for Recirculation Flap Motor Position Sensor G143 (calculated by operating and display module, Climatronic Control Module J255)	• Display range "10 to 245"
3	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Recirculation Flap Motor Position Sensor G143 with control motor set to "Lower stop" (recirculated-air flap closed, fresh-air mode)	• Display value greater than "9" and less than "71"
4	Value determined during "Basic setting" and stored in the operating and display module, Climatronic Control Module J255 for the Recirculation Flap Motor	• Display value greater than "189" and less than "246"

	Position Sensor G143 with control motor set to "Upper stop" (recirculated-air flap open, recirculated-air mode)	

NOTE:

- **The Recirculation Flap Motor V113 only moves the recirculated-air flap. The air flow/fresh-air flaps are moved by the Air Flow Flap Motor V71.**
- **On right-hand drive vehicles, the Recirculation Flap Motor V113 moves both the recirculated-air flap and the fresh-air flaps. As these vehicles are not installed with an Air Flow Flap Motor V71 , the fresh-air flaps cannot be used as air flow flaps and air flow mode is thus not possible.**
- **The notes on display group "003" also apply to this display group and should be observed if necessary.**

Display group "009"

Measuring values of the following sensors (Left Footwell Vent Temperature Sensor G261 , Right Footwell Vent Temperature Sensor G262 , Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151)

Display field	Meaning	Remarks
1	Measuring value of Left Footwell Vent Temperature Sensor G261 in °C	• Checking --> **Automatic Climate Control System, electrical testing**
2	Measuring value of Right Footwell Vent Temperature Sensor G262 in °C	• Checking --> **Automatic Climate Control System, electrical testing**
3	Measuring value of Left Vent Temperature Sensor G150 in °C	• Checking --> **Automatic Climate Control System, electrical testing**
4	Measuring value of Right Vent Temperature Sensor G151 in °C	• Checking --> **Automatic Climate Control System, electrical testing**

Display group "010"

Measuring values of the following sensors (Evaporator Vent Temperature Sensor G263 , Fresh Air Intake Duct Temperature Sensor G89) and temperature values transmitted by the Instrument Cluster Control Module J285 (ambient temperature calculated and ambient temperature measured by Outside Air Temperature Sensor G17)

Display field	Meaning	Remarks
1	Measuring value of Evaporator	• Checking --> **Automatic**

	Vent Temperature Sensor G263 in °C	**Climate Control System, electrical testing**

- Depending on the setting at the operating and display module, Climatronic Control Module J255 , the temperature at the evaporator is regulated to the following values:

  - In normal control mode between 2 °C and 10 °C
  - At temperatures less than 13 °C at least 3 °C below the ambient temperature determined but not less than 2 °C
  - At temperatures less than 16 °C and with rainfall (windshield wipers switched on) at least 6 °C below the ambient temperature determined but not less than 2 °C.
  - 2 °C with "Lo" temperature setting at operating and display module, Climatronic Control Module J255

NOTE:

- **If a temperature below 2 °C is measured for a lengthy period by the Evaporator Vent Temperature Sensor G263 , the operating and display module, Climatronic Control Module J255 switches off the compressor.**
- **The value measured by the Evaporator Vent Temperature Sensor G263 is used to control the evaporator temperature. The evaporator temperature is altered by actuating the A/C Compressor Regulator Valve N280 (display group "001").**
- **- At least 5 °C, however not less than 2 °C with "recirculated-air mode" set at operating and display module, Climatronic Control Module J255.**
- **At higher ambient temperatures, the specified temperatures are not always attained at the Evaporator Vent Temperature Sensor G263 (despite the compressor operating at maximum output).**
- **Activation for the A/C Compressor Regulator Valve N280 to control the compressor output is displayed in zones "1" and "2" of display group "001".**
- **If the Evaporator Vent Temperature Sensor G263 has not been properly installed or if it supplies an excessively high temperature value, the evaporator may ice up (the operating and display module, Climatronic Control Module J255 assumes from the measured value that the required evaporator temperature has not been attained).**

Display field	Meaning	Remarks
2	Measuring value of Fresh Air Intake Duct Temperature Sensor G89 in °C	• Checking --> **Automatic Climate Control System, electrical testing**
3	Calculated ambient temperature in °C transmitted by Instrument Cluster Control Module J285	• Data are exchanged via the CAN-Bus comfort system. • The Instrument Cluster Control Module J285 calculates the current

		ambient temperature on the basis of the incoming temperature measured values (Outside Air Temperature Sensor G17 , Fresh Air Intake Duct Temperature Sensor G89), the vehicle speed and standing time etc.
4	Measured value transmitted by Instrument Cluster Control Module J285 of Outside Air Temperature Sensor G17 in °C	• Data are exchanged via the CAN-Bus comfort system. • The Outside Air Temperature Sensor G17 is connected to the Instrument Cluster Control Module J285

NOTE:

- **Checking measured value of Outside Air Temperature Sensor G17 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052**
- **When the vehicle is stationary, for example, the measured values of the Outside Air Temperature Sensor G17 and the Fresh Air Intake Duct Temperature Sensor G89 are impaired by the heat given off by the radiator or exhaust system etc. For this reason a program is stored in the Instrument Cluster Control Module J285 which suppresses a higher measured temperature in the event of a traffic jam following a lengthy period of operation or in urban traffic for instance. The cooler arithmetic value is then displayed instead of the measured value in the ambient temperature indicator.**
- **The display in zone "3 " is based on the lower of the two measured ambient temperatures (display zone "2" and display zone "4"). After switching off the ignition, the value remains stored for up to 4 hours and the current measured values are not displayed.**

Measuring value blocks from display group "011" through "020"

Display group "011"

Measuring value of Instrument Panel Interior Temperature Sensor G56 , measured speed of Interior Temperature Sensor Fan V42 , coolant temperature transmitted by Instrument Cluster Control Module J285 and activation of output for idling speed increase

Display field	Meaning	Remarks
1	Measuring value of Instrument Panel Interior Temperature Sensor G56 in °C	• Installed in operating and

		display module, Climatronic Control Module J255 ○ The operating and display module, Climatronic Control Module J255 is installed with a Interior Temperature Sensor Fan V42 , which is responsible for blowing air from the central instrument panel area to the Instrument Panel Interior Temperature Sensor G56
2	Speed of Interior Temperature Sensor Fan V42 in RPM • Display = greater than 2000 ○ Blower speed OK • Display = less than 2000 ○ Interior Temperature Sensor Fan V42 stiff, replace operating and display module, Climatronic Control Module J255	• Installed in operating and display module, Climatronic Control Module J255 ○ The operating and display module, Climatronic Control Module J255 is installed with a Interior Temperature Sensor Fan V42 , which is responsible for blowing air from the central instrument panel area to the Instrument Panel Interior Temperature

		Sensor G56.

NOTE:

- **The Instrument Panel Interior Temperature Sensor G56 is vented by the Interior Temperature Sensor Fan V42. If the intake frame in the trim of the operating and display module, Climatronic Control Module J255 is closed off or if the Interior Temperature Sensor Fan V42 is not running, the temperature sensor cannot properly record the actual passenger compartment temperature and air conditioner regulation will not be correctly implemented.**
- **The Instrument Panel Interior Temperature Sensor G56 and the Interior Temperature Sensor Fan V42 are permanently installed in the operating and display module, Climatronic Control Module J255 and cannot be replaced separately.**
- **The Interior Temperature Sensor Fan V42 is always in operation when the ignition is on.**
- **If the Interior Temperature Sensor Fan V42 is stiff and the blower speed drops below 1500 RPM, this situation is stored as a fault in the DTC memory of the operating and display module, Climatronic Control Module J255. At ambient temperature, the Interior Temperature Sensor Fan V42 runs at a speed of approx. 3000 RPM.**

Display field	Meaning	Remarks
3	Coolant temperature in °C transmitted by Instrument Cluster Control Module J285	• Data are exchanged via the CAN-Bus comfort system.

NOTE:

- **To prevent abrupt shutoff of the compressor because of excessive coolant temperature, its output is reduced by the operating and display module, Climatronic Control Module J255 as soon as the coolant temperature transmitted by the Instrument Cluster Control Module J285 exceeds 115 °C (at 118 °C the compressor is shut down completely).**
- **If the coolant temperature is less than 40 °C, the Instrument Cluster Control Module J285 may not transmit a coolant temperature via the CAN-Bus comfort system. In this case, start the engine and wait until the coolant temperature is in excess of 40 °C. If "Not OK" is displayed with a warm engine, perform On Board Diagnostic (OBD) for the Instrument Cluster Control Module J285 Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052**

Display field	Meaning	Remarks
4	Activation for output for idling speed increase	• Data are transferred via the

	• Display = "Off" ○ Idling speed increase not requested by operating and display module, Climatronic Control Module J255 • Display = "On" ○ Idling speed increase requested by operating and display module, Climatronic Control Module J255 (e.g. in "Lo" or "Hi" temperature setting)	CAN-Bus comfort system to the Instrument Cluster Control Module J285. The Instrument Cluster Control Module J285 transmits the data via the drive CAN-Bus system to the engine control module.

NOTE:

- **The way in which this signal is processed in the engine control module varies for the individual engines.**
- **Checking "Idling speed control" (idling speed increase) function "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.**
- **Idling speed control is only activated if there are no compressor shutoff criteria preventing activation of the A/C Compressor Regulator Valve N280 (e.g. engine not running or "ECON" mode selected). The operating and display module, Climatronic Control Module J255 activates the request e.g. in "Lo" or "Hi" temperature setting.**
- **This function informs the engine control module that the air conditioner requires a higher engine speed to attain the specified setting (higher compressor speed or more heat output from engine).**
- **The request for idling speed increase is activated by the operating and display module, Climatronic Control Module J255 to provide better heating or cooling output, e.g. in "Hi" or "Lo" temperature setting ("Lo" only with compressor switched on).**

Display group "012"

Current engine speed transmitted by Instrument Cluster Control Module J285 , vehicle speed, status and value of compressor torque transmitted to Instrument Cluster Control Module J285

Display field	Meaning	Remarks
1	Current engine speed in RPM transmitted by Instrument Cluster Control Module J285	• Data are transmitted via CAN-Bus comfort system
2	Vehicle speed in km/h transmitted by Instrument Cluster Control Module J285	• Data are transmitted via

	• Display = "0" ○ No vehicle speed signal detected since switching on ignition • Display = "1" ○ Vehicle speed signal greater than 5 km/h received at least once from Instrument Cluster Control Module J285 since switching on ignition • Display = "1 to XX" ○ Current vehicle speed in km/h	the CAN-Bus comfort system

NOTE:

- **If the vehicle was driven at more than 5 km/h after switching on the ignition and before starting On Board Diagnostic (OBD), "1" is displayed with the vehicle stationary to indicate that least at one vehicle speed signal has been received.**

Display field	Meaning	Remarks
3	Status of compressor torque transmitted to engine control unit (via Instrument Cluster Control Module J285) (display zone 4) • Display = "0" ○ The compressor torque transmitted is currently valid • Display = "1" ○ The compressor torque transmitted is no longer valid	• Data are transmitted via the CAN-Bus comfort system to the Instrument Cluster Control Module J285 , from where they are relayed via the drive CAN-Bus system to the engine control module.

NOTE:

- **"1" is displayed e.g. for a brief period after switching on ignition or if terminal "15" is not active (no signal received from Instrument Cluster Control Module J285).**

Display field	Meaning	Remarks
4	Engine torque required for compressor operation in Nm calculated by operating and display module, Climatronic Control Module J255 and transmitted to engine control unit (via Instrument Cluster Control	• Calculated by operating and display module, Climatronic

	Module J285)	Control Module J255 • Data are transferred via the CAN-Bus comfort system to the Instrument Cluster Control Module J285. The Instrument Cluster Control Module J285 transmits the data via the drive CAN-Bus system to the engine control module. ○ The calculated torque is determined by various factors of influence (refer to note).
	• Display = "0 to 1.0" Nm ○ Compressor off (A/C Compressor Regulator Valve N280 is not activated)	○ A torque of less than "1" is displayed if, for example, the operating and display module, Climatronic Control Module J255 is set to "ECON" mode.
	• Display = "1 to XX" Nm ○ Compressor on (A/C Compressor Regulator Valve N280 is activated)	

NOTE:

- **The operating and display module, Climatronic Control Module J255 uses various measured values for calculating compressor torque (e.g. ambient temperature, pressure in refrigerant circuit, engine speed). Depending on these variables, the value calculated may be 1 to 25 Nm with the compressor switched on. A value of less than 1.0 Nm is displayed if the compressor is switched off.**

Display group "013"

Activation for Fresh Air Blower V2 and calculated Fresh Air Blower speed, voltage transmitted by Instrument Cluster Control Module J285 at terminals "58d" and "58s" (in %)

Display field	Meaning	Remarks
1	Activation for Fresh Air Blower V2 via Fresh Air Blower Control Module J126 as a % of maximum possible activation • Display = "0 to 5 %" ○ Fresh Air Blower V2 switched off • Display = "12 to 88%" ○ Fresh Air Blower V2 in control mode	• Calculated by operating and display module, Climatronic Control Module J255
2	Speed in RPM calculated by operating and display module, Climatronic Control Module J255 via speed signal transmitted by Fresh Air Blower Control Module J126 at Fresh Air Blower V2	• Any deviation from the specified speed is determined by the Fresh Air Blower Control Module J126 and signalled to the operating and display module, Climatronic Control Module J255 (display group "018")

- To improve voice recognition and the clarity of telephone voice input, the Fresh Air Blower speed is reduced on vehicles as of Model Year 2002 (with operating and display module, Climatronic Control Module J255 as of hardware/software version "0711"). The following applies:

  - The reduction takes effect as soon as the message "Telephone voice input" is transmitted via the CAN-Bus comfort system.
  - The reduction time is limited to max. 2 minutes.
  - The amount by which the Fresh Air Blower speed is reduced depends on the air outflow direction and the Fresh Air Blower speed when the "Telephone voice input" signal is received. The greater the proportion of air routed to the instrument panel vents, the more the speed is reduced.
  - In the basic setting, the Fresh Air Blower speed with 100% air to the instrument panel vents is limited to 15 % of the maximum Fresh Air Blower speed. This restriction can be reduced or cancelled via the "Adaptation" function in adaptation channel "8". --> **Adaptation of fresh air blower RPM decrease, performing (adaptation channel 08)**

NOTE:

- **The Fresh Air Blower Control Module J126 is integrated into the Fresh Air Blower V2 and cannot be replaced separately at present.**
- **Activation for the Fresh Air Blower V2 is calculated by the operating and display module, Climatronic Control Module J255 on the basis of the measured temperatures and the settings made.**
- **The Fresh Air Blower speed is transmitted by the Fresh Air Blower Control Module J126 to the operating and display module, Climatronic Control Module J255.**

Display field	Meaning	Remarks
3	Voltage transmitted by Instrument Cluster Control Module J285 at terminal "58d" • Display = "0 to 100%" ○ Display as a % of maximum possible voltage ○ Depending on setting of Instrument Panel Illumination Dimmer Switch E20	• Data are transmitted via the CAN-Bus comfort system ○ The voltage at terminal "58d" controls the illumination of the operating and display module, Climatronic Control Module J255 displays.
4	Voltage transmitted by Instrument Cluster Control Module J285 at terminal "58s" • Display = "0 %" ○ With side lights off • Display = "1 to 100%" ○ Side lights on ○ Display as a % of maximum possible voltage ○ Depending on setting of Instrument Panel Illumination Dimmer Switch E20	• Data are transmitted via the CAN-Bus comfort system ○ The voltage at terminal "58s" controls the illumination of the operating and display module, Climatronic Control Module J255 buttons (switches) ○ If display is "0%" , buttons (switches) are not illuminated

NOTE:

- **With the ignition switched on, the voltage at terminal "58d" for display illumination is always output by the Instrument Cluster Control Module J285. In daylight, 100% may always be displayed depending on the brightness to which the instrument cluster photosensor is exposed.**
- **At present, the voltage at terminal "58s" for illuminating the buttons (switches) is only output by the Instrument Cluster Control Module J285 with the side lights switched on (regardless of whether ignition is on or off). In daylight, 100% may always be displayed depending on the brightness to which the instrument cluster photosensor is exposed "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052**

Display group "014"

Activation for Coolant Fan V7 , signal from Air Quality Sensor G238 and request for fresh-air or recirculated-air mode by operating and display module, Climatronic Control Module J255.

Display field	Meaning	Remarks
1	Activation for Coolant Fan V7 in % • Display = "0 %" ○ No activation of Coolant Fan V7 by operating and display module, Climatronic Control Module J255 • Display = "1 to 100%" ○ Request for activation of Coolant Fan V7 by operating and display module, Climatronic Control Module J255 at so many % of maximum output	• Data are transmitted via the CAN-Bus comfort system. • Data are transferred via the CAN-Bus comfort system to the Instrument Cluster Control Module J285. The Instrument Cluster Control Module J285 transmits the data via the drive CAN-Bus system to the engine control module.

NOTE:

- **The request for activation of the Coolant Fan V7 is transmitted by the operating and display module, Climatronic Control Module J255 if there is no compressor shutoff condition preventing activation of the compressor (activation of A/C Compressor Regulator Valve N280) (e.g. engine not running or "ECON" mode selected).**
- **The Coolant Fan V7 is/are infinitely regulated by the Coolant Fan Control (FC)Control Module J293. The Coolant Fan Control (FC)Control Module**

J293 is activated by the relevant engine control module. The engine control module is activated by the operating and display module, Climatronic Control Module J255 via the convenience and drive CAN-Bus systems to activate the Coolant Fan V7.

- **However, the engine control module only activates the Coolant Fan Control (FC)Control Module J293 (and thus the Coolant Fan V7) if the engine is running.**
- **The request for activation of the Coolant Fan V7 is transmitted by the operating and display module, Climatronic Control Module J255 to the engine control module. 100% is currently only requested at a pressure of approx. 26 bar in the refrigerant circuit.**

Display field	Meaning	Remarks
2	• Display field not used ○ Vehicles with operating and display module, Climatronic Control Module J255 up to hardware/software version "0202"	
	• Feedback of activation transmitted by relevant engine control module to Coolant Fan Control (FC)Control Module J293 for Coolant Fan V7 in % ○ Vehicles with operating and display module, Climatronic Control Module J255 as of hardware/software version "0203" ○ Depending on ambient conditions (coolant temperature etc.), this value may be higher than request in display zone "1".	
3	• Vehicles with no Air Quality Sensor G238 ○ Display = "n. installed" ○ If, depending on hardware/software version of operating and display module, Climatronic Control Module J255 , a different display appears, this can be ignored.	• In the event of problems, check coding of operating and display module, Climatronic Control Module J255 if applicable
	• Vehicles with Air Quality Sensor G238 ○ Display = "X" (explanatory notes **Remarks on requests from Air Quality Sensor G238 in zone "3" of display group " 014"**)	
4	Request for fresh or recirculated-air mode	

	- Display = "XX" (explanatory notes **Remarks on requests for fresh-air or recirculated-air mode in zone "4" of display group "014"**)	

Remarks on requests from Air Quality Sensor G238 in zone "3" of display group " 014"

Air Quality Sensor G238 request code	Meaning
5 (or 7)	• No increased air pollution values measured ○ No request for autom. recirculated-air mode, fresh-air mode ○ The display "5" or "7" depends on the version of the operating and display module, Climatronic Control Module J255
1	• Slight increase in oxidizable gases in the air ○ Fresh-air or autom. recirculated-air mode depending on various conditions (refer to display zone "4")
2	• Considerable increase in oxidizable gases in the air

	○ Fresh-air or autom. recirculated-air mode depending on various conditions (refer to display zone "4")
3	- Slight increase in reducible gases in the air ○ Fresh-air or autom. recirculated-air mode depending on various conditions (refer to display zone "4")
4	- Considerable increase in reducible gases in the air ○ Fresh-air or autom. recirculated-air mode depending on various conditions (refer to display zone "4")
0, 254 or 255	- No signal from Air Quality Sensor G238 ○ Open circuit in power supply or Ground

	(GND) connection to Air Quality Sensor G238 ○ Open circuit or short to Ground (GND)/positive in wiring between and operating and display module, Climatronic Control Module J255 and Air Quality Sensor G238 • Air Quality Sensor G238 defective ○ Replace Air Quality Sensor G238

NOTE:

- **Oxidizable gases include carbon monoxide, benzene and hexane. These react with the oxygen in the air and are found, for example, in gasoline engine exhaust gases.**
- **Reducible gases include nitrogen oxides, sulphur dioxides and hydrogen sulphides. These react with other substances, give off oxygen in the process and are found, for example, in engine exhaust gases.**
- **Depending on the hardware/software version of the operating and display module, Climatronic Control Module J255 , there is either no display for vehicles with no Air Quality Sensor G238 or the display is "n. installed".**

Remarks on requests for fresh-air or recirculated-air mode in zone "4" of display group "014"

Fresh-air/recirculated-air mode request code	Meaning	Remarks
00 (or 0)	• No request for recirculated-air mode	○ Air conditioner in fresh-air mode (fresh-

		air flaps open, set to "fresh-air mode" , recirculated-air flap closed)
10	- Recirculated-air mode requested by Air Quality Sensor G238 (refer to display zone "3") ○ Request is fulfilled by operating and display module, Climatronic Control Module J255.	- Air conditioner in recirculated-air mode ○ Fresh-air flaps closed, recirculated-air flap open
11 * See note	- Recirculated-air mode requested by Air Quality Sensor G238 (refer to display zone "3") ○ Request is not fulfilled by operating and display module, Climatronic Control Module J255. - Recirculated-air mode not requested by Air Quality Sensor G238 (refer to display zone "3") * See note	- As the "automatic air recirculation" function is not active (lamp in button for "automatic air recirculation" not lit), switching to recirculated-air mode is not effected despite being requested by the Air Quality Sensor G238 - Air conditioner in fresh-air mode (fresh-air flaps open, set to "fresh-air mode" ,

		recirculated-air flap closed)
12 * See note	• Recirculated-air mode requested by Air Quality Sensor G238 (refer to display zone "3") ○ Request is not fulfilled by operating and display module, Climatronic Control Module J255. • Recirculated-air mode not requested by Air Quality Sensor G238 (refer to display zone "3") * See note	• As the compressor is not in operation, switching to recirculated-air mode is not effected despite being requested by the Air Quality Sensor G238 • The request is no longer fulfilled as the compressor has been switched off (e.g. via ECON button) and more than 15 seconds have already elapsed since the start of the request. • The request is not fulfilled as the compressor does not switch on (refer to display group "002") ○ System in fresh-air mode (fresh-

		air flaps open, recirculated-air flap closed)
13 * See note	• Recirculated-air mode requested by Air Quality Sensor G238 (refer to display zone "3") ○ Request is not fulfilled by operating and display module, Climatronic Control Module J255. • Recirculated-air mode not requested by Air Quality Sensor G238 (refer to display zone "3") * See note	• As the air conditioner is in "Defrost" mode (lamp in "DEF" button lit), switching to recirculated-air mode is not effected despite being requested by Air Quality Sensor G238 ○ System in fresh-air mode (fresh-air flaps open, recirculated-air flap closed)
Continued in next table		

* Depending on the hardware/software version of the operating and display module, Climatronic Control Module J255 , "11" , "12" or "13" may also be displayed although the Air Quality Sensor G238 has not requested recirculated-air mode because of the air quality. Attention is therefore to be paid to display zone "3".

NOTE:

- **If recirculated-air mode has not been requested, "0" may also be displayed instead of "00".**
- **To prevent possible misting-up of the windows, the "automatic air recirculation" function is limited to approx. 15 seconds when the compressor does not switch on.**
- **In the event of a malfunction at the Air Quality Sensor G238 , "automatic recirculated-air mode" cannot be implemented.**
- **To clear misted windows as quickly as possible, air recirculation cannot be implemented in "defrost mode".**
- **The purpose of the Air Quality Sensor G238 is to stop any short-term high**

pollutant concentrations (peak impacts) in the ambient air entering the passenger compartment. This is achieved by the operating and display module, Climatronic Control Module J255 switching the system from fresh-air to recirculated-air mode after receiving a request from the Air Quality Sensor G238.

- **If the pollutant level in the ambient air remains relatively high for a lengthy period, the Air Quality Sensor G238 starts to adapt to the change in ambient conditions by way of an adaptation program, with the result that a recirculated-air request is generally applied for less than 12 minutes given uniform ambient air pollution. In the event of several consecutive peak impact levels, the air conditioner may also operate in recirculated-air mode for a longer period.**

Fresh-air/recirculated-air mode request code	Meaning	Remarks
20	• Air conditioner switched to recirculated-air mode by way of "recirculated-air button" of operating and display module, Climatronic Control Module J255	• Air conditioner in recirculated-air mode ○ Lamp in "recirculated-air button" lit ○ Fresh-air flaps closed, recirculated-air flap open
30	• After cleaning the windshield with the wash/wipe function, the air conditioner operates in recirculated-air mode for approx. 10 seconds ○ This is designed to prevent any cleaning agent odor ingress directly into the passenger compartment	• Air conditioner in recirculated-air mode ○ Fresh-air flaps closed, recirculated-air flap open
40	• The air conditioner is in recirculated-air mode in order to attain the specified passenger compartment temperature required as quickly as possible at a high ambient temperature (increased cooling output)	• Air conditioner in recirculated-air mode ○ Recirculated-

	○ Increased cooling output is requested for example by the air conditioner if "Lo" has been set as specified temperature for at least one side on the operating and display module, Climatronic Control Module J255.	air mode is maintained until the specified and actual passenger compartment temperatures have been assimilated to within a stipulated temperature difference ○ Fresh-air flaps closed, recirculated-air flap open
50	- Air conditioner switched off by way of Off button or blower - button (on vehicles with Air Quality Sensor G238) of operating and display module, Climatronic Control Module J255.	○ Fresh-air flaps closed, recirculated-air flap open
60	- The operating and display module, Climatronic Control Module J255 has determined an operating status in which it is more appropriate for comfort reasons to open both flaps (fresh-air and recirculated-air flap)	- Air conditioner in partial recirculated-air mode - The air conditioner is in the process of switching from fresh-air to recirculated-air mode or from recirculated-air to fresh-air mode (the fresh-air or recirculated-air flap is opened

		before the recirculated-air or fresh-air flap is closed). ○ Some of the air is drawn in from the passenger compartment and the rest via the dust and pollen filter.

NOTE:

- **The "partial air recirculation" function was introduced to provide greater comfort. The running sound of the fresh-air blower changes when the air conditioner switches over. The modified sequence (consecutive as opposed to simultaneous activation of the flaps) ensures a smoother transition.**
- **The air conditioner may remain in "partial recirculated-air mode" for a lengthy period (for example to achieve good cooling performance in the case of high ambient temperatures without the system having to operate constantly in recirculated-air mode).**
- **If recirculated-air mode has not been requested, "0" may also be displayed instead of "00".**
- **To clear misted windows as quickly as possible, air recirculation cannot be implemented in "defrost mode".**

Display group "015"

Activation for Heated Rear Window Z1 , Heated Windshield Z2 and supplementary heater (electric or fuel-driven) and position of convertible top on Audi Cabrio

Display field	Meaning	Remarks
1	Activation for Heated Rear Window Z1 • Display = "Off" ○ Activation for Heated Rear Window Z1 off • Display = "On" ○ Activation for Heated Rear Window Z1 on	

NOTE:

- **Checking activation of Heated Rear Window --> Heated Rear Window Z1 , testing**
- **On vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 is activated directly by the operating and display module, Climatronic Control Module J255 (the relay for switching the current is installed in the operating and display module, Climatronic Control Module J255).**
- **On vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 will no longer be activated directly by the operating and display module, Climatronic Control Module J255 (operating and display modules, Climatronic Control Module J255 with part No. index "AJ" onwards are no longer installed with a relay). On these vehicles, the Heated Rear Window Z1 is activated via the Rear Window Defogger Relay J9.**
- **At ambient temperatures below 0 °C, the Heated Rear Window remains switched on until the ignition is switched off (manual deactivation is possible at any time). If the temperature during a driving cycle rises above 0 °C, the Heated Rear Window Z1 is deactivated on completion of the operating period stored in the operating and display module, Climatronic Control Module J255 (approx. 12 minutes).**
- **At ambient temperatures greater than 0 °C, activation of the Heated Rear Window Z1 is terminated automatically on completion of the operating period (approx. 12 minutes) stored in the operating and display module, Climatronic Control Module J255 via the operating and display module, Climatronic Control Module J255.**

Display field	Meaning	Remarks
2	Signal for activation of Heated Windshield Z2	
	Display = "n. installed" (or "00")	• The operating and display module, Climatronic Control Module J255 has been coded for a vehicle not installed with a Heated Windshield Z2 as optional extra. If applicable, check coding of operating and display module,

		Climatronic Control Module J255 --> **Climatronic Control Module J255, coding (function 07)**.
	Display = "00" (or "0") - Request for activation of Heated Windshield Z2 off ○ Activation for Heated Windshield Z2 off	- Switch in operating and display module, Climatronic Control Module J255 open ○ No check of voltage at connector "C" , contact "8" to operating and display module, Climatronic Control Module J255
	Display = "10" - Request for activation of Heated Windshield Z2 on ○ Activation for Heated Windshield Z2 off	- Switch in operating and display module, Climatronic Control Module J255 closed - Switch at output of Heated Windshield Control Module J505 to operating and display module, Climatronic Control Module J255 open ○ Voltage at connector "C" , contact "8" to operating and display module, Climatronic

		Control Module J255 less than 5 V
	Display = "11" • Request for activation of Heated Windshield Z2 on ○ Activation for Heated Windshield Z2 on	• Switch in operating and display module, Climatronic Control Module J255 closed • Switch at output of Heated Windshield Control Module J505 to operating and display module, Climatronic Control Module J255 closed ○ Voltage at connector "C" , contact "8" to operating and display module, Climatronic Control Module J255 greater than 5 V and less than 8 V

NOTE:

- **The display for vehicles not installed with a Heated Windshield Z2 and a Heated Windshield Control Module J505 is "n. installed" or "0" or "00".**
- **The Heated Windshield Control Module J505 switches approx. Battery voltage to the output to the operating and display module, Climatronic Control Module J255 as long as the voltage at the Heated Windshield Control Module J505 is greater than 12.70 V and the control unit is not too hot.**
- **If the Heated Windshield must be activated, the operating and display module, Climatronic Control Module J255 activates a transistor which halves the voltage at connector "C" contact "8". The Heated Windshield Control Module J505 then switches on the Heated Windshield.**
- **If, during heating of the windshield, the voltage (electrical system voltage at Heated Windshield Control Module J505) drops below 12.70 V or if the Heated Windshield Control Module J505 become too hot, a switch in the Heated Windshield Control Module J505 opens and the voltage at the**

output to the operating and display module, Climatronic Control Module J255 drops below 5 V. At the same time, the Heated Windshield is deactivated by the Heated Windshield Control Module J505.

- **For operation of Heated Windshield Z2 , refer to --> Windshield defroster.**

Display field	Meaning	Remarks
4	Saloon, Avant (or Coupe) • Display = "n. installed" Or • Display = "Closed"	• The operating and display module, Climatronic Control Module J255 has been coded for a vehicle with no convertible top. If applicable, check coding of operating and display module, Climatronic Control Module J255.
	Detection of position of convertible top on Cabrio • Display = "Closed" ○ Convertible top closed • Display = "Open" ○ Convertible top open	• Data are transmitted via the CAN-Bus comfort system ○ The Convertible Top Control Module J256 transmits the information "convertible top open or closed"

NOTE:

- **Display only applicable to Audi Cabrio.**
- **If an open convertible top is detected on an Audi Cabrio, the operating and display module, Climatronic Control Module J255 alters the control characteristic curve of the air conditioner (no enclosed passenger compartment).**

Display group "016"

Measured values of Sunlight Photo Sensor G107 and sunlight penetration calculated on the basis of these values

Display field	Meaning	Remarks
1	Measuring value of Sunlight Photo Sensor G107 in V for left side	• Depending on sunlight penetration intensity 0.2 to 4.5 V
2	Measuring value of Sunlight Photo Sensor G107 in Watts per m ^{2} for left side	• Depending on sunlight penetration intensity 0 to 1000 W
3	Measuring value of Sunlight Photo Sensor G107 in V for right side	• Depending on sunlight penetration intensity 0.2 to 4.5 V
4	Measuring value of Sunlight Photo Sensor G107 in Watts per m ^{2} for right side	• Depending on sunlight penetration intensity 0 to 1000 W

NOTE:

- **The display value for the Sunlight Photo Sensor G107 can be altered by aiming a suitable lamp at the sensor.**
- **If, irrespective of the illumination of the Sunlight Photo Sensor G107 , the sunlight penetration display is always approx. 900 W per m ^{2} (corresponding to roughly 4.5 V), use wiring diagram to check for interchanged wiring to Sunlight Photo Sensor G107.**
- **The sunlight penetration value displayed is governed to a considerable extent by the season and time of day as well as by the location of the vehicle (in Central Europe, the display with maximum sunlight penetration in summer will be up to approx. 900 W pro m ^{2}).**
- **If a fixed value is always displayed in zones "1" to "4" irrespective of sunlight penetration (e.g. 100 W), check assignment of Sunlight Photo Sensor G107 to operating and display module, Climatronic Control Module J255.**
- **There are different versions of the operating and display module, Climatronic Control Module J255 and the Sunlight Photo Sensor G107. Attention must therefore be paid to the exact assignment when replacing an operating and display module.**
- **As of VIN 400000 in Model Year 2005 (for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), vehicles are to be installed with a modified Sunlight Photo Sensor G107 and a modified operating and display module, Climatronic Control Module J255. Operating and display units, Climatronic Control Module J255 with part No. index up to "AH" are only to be installed with the Sunlight Photo Sensor G107 with part No. 8E0 907 539. Operating and display units, Climatronic Control Module J255 with part No. index "AJ" onwards are only to be installed with the Sunlight Photo Sensor G107 with part No. 8P0 907 539 .**
- **In the event of incorrect assignment between the Sunlight Photo Sensor**

G107 and the operating and display module, Climatronic Control Module J255 , the operating and display module, Climatronic Control Module J255 cannot evaluate the signal from the Sunlight Photo Sensor G107 and there will be problems with air conditioner control.

Display group "017"

Transmitted/measured status, voltage at terminal "15" , "75" and "30"

Display field	Meaning	Remarks
1	Information transmitted by Steering Column Electronic Systems Control Module J527 to terminal "15" • Display = "On" ○ Terminal "15" ON information being applied (ignition switched on) • Display = "Off" ○ Terminal "15" ON information not being applied (ignition switched off)	• Data are transmitted via the CAN-Bus comfort system ○ The Steering Column Electronic Systems Control Module J527 transmits the information "Ignition switched on"
2	Information transmitted by Steering Column Electronic Systems Control Module J527 to terminal "75" • Display = "On" ○ Terminal "75" ON information being applied (ignition switched on) • Display = "Off" ○ Terminal "75" ON information not being applied (ignition switched off or engine in the process of being started)	• Data are transmitted via the CAN-Bus comfort system ○ The Steering Column Electronic Systems Control Module J527 transmits the information "Terminal 75 on" ○ With the ignition switched on, the terminal "75" ON information must always be applied except on starting the engine.

Display field	Meaning	Remarks
3	Application of voltage from terminal "75" at operating and display module, Climatronic Control Module J255 • Display = "On" ○ Connector "C" , contact "13" supplied with voltage from terminal "75" (ignition switched on) • Display = "Off" ○ Connector "C" , contact "13" not supplied with voltage from terminal "75" (ignition switched off or engine in the process of being started)	○ The voltage is determined via the input from connector "C" , contact "13" to the operating and display module, Climatronic Control Module J255 ○ With the ignition switched on, voltage must always be applied to terminal "75" except on starting the engine.
4	Measured voltage at terminal "30" in V ○ Terminal "30" voltage measured at connector "D" , contact "12"	○ The voltage is measured at connector "D" to the operating and display module, Climatronic Control Module J255 between contacts "12" and "13"

Display group "018"

Time period transmitted by Instrument Cluster Control Module J285 for "Ignition switched off" and ignition key assignment transmitted, windshield wiper signal transmitted by Steering Column Electronic Systems Control Module J527 and operating status transmitted by Fresh Air Blower Control Module J126 for Fresh Air Blower V2

Display field	Meaning	Remarks
1	Time transmitted by Instrument Cluster Control Module J285 for period between ignition being switched off and on • Display = "00:00 to XX:XX h" ○ Ignition switched off time	• Data are transmitted via the CAN-Bus comfort system

	(standing time) in hours and minutes	

NOTE:

- **If an "ignition off time" signal is not detected by the operating and display module, Climatronic Control Module J255 when the ignition is switched on, the operating and display module, Climatronic Control Module J255 assumes a standing time of more than 4 hours and the engine temperature is taken to be the same as the ambient temperature. In heating mode, for example, this may lead to delayed start-up of the fresh-air blower despite the engine being warm. The Outside Air Temperature Display G106 in the instrument cluster may also display incorrect ambient temperature values.**
- **After a standing time of 4 hours, the operating and display module, Climatronic Control Module J255 assumes for temperature calculation purposes that all vehicle components are at ambient temperature.**
- **Depending on the hardware/software version of the operating and display module, Climatronic Control Module J255 , the display in this zone is limited to a value stored in the operating and display module, Climatronic Control Module J255 (e.g. 3:59 h, 04:46 h) or the actual time is displayed.**
- **After connection of the Battery A , the Instrument Cluster Control Module J285 may effect restart (reset) and may therefore not be able to transmit a time signal when the ignition is first switched on. If applicable, switch off ignition for several minutes and check time period displayed after switching ignition back on.**

Display field	Meaning	Remarks
2	Ignition key assignment transmitted by Instrument Cluster Control Module J285 • Display = "0" ○ The ignition was switched on with a key for which there is no assignment in the Instrument Cluster Control Module J285 • Display = "1 to 4" ○ The ignition was switched on using the key set in the Instrument Cluster Control Module J285 to position (1, 2, 3 or 4).	• Data are transmitted via the CAN-Bus comfort system ○ Check adaptation of ignition key "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 and --> ○ **90 INSTRUMENTS** ○ **90 INSTRUMENTS** for ELECTRICAL EQUIPMENT, CABRIOLET ○ Up to 4 keys can be assigned.

NOTE:

- **Ignition key assignment can only be detected and thus transmitted by the Instrument Cluster Control Module J285 on vehicles installed with an immobilizer "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 and -->**
  - **90 INSTRUMENTS**
  - **90 INSTRUMENTS for ELECTRICAL EQUIPMENT, CABRIOLET**

  (Servicing instrument cluster).
- **When the ignition is switched on, the operating and display module, Climatronic Control Module J255 starts with the settings which were valid the last time the ignition was switched off with this key (temperature, air distribution, Fresh Air Blower speed).**
- **If the ignition is switched on using a key not released for this vehicle (e.g. via the emergency starting function), the operating and display module, Climatronic Control Module J255 as of hardware/software version "0711" switches automatically to "Off" mode after switching on the ignition and can only be switched to "Def" mode with the ignition switched on (no other settings possible). At the same time, a fault is stored in the operating and display module, Climatronic Control Module J255 (Anti-Theft Immobilizer Control Module J334). This function was incorporated as part of enhancement of the anti-theft protection system.**

Display field	Meaning	Remarks
3	Signal for windshield wiper operating status from Steering Column Electronic Systems Control Module J527 • Display = "00000" ○ No windshield wiper or wipe/wash operation activated (wipers in rest position) • Display = "X0001" ○ Intermittent windshield wiper operation • Display = "X0010" ○ Windscreen wiper speed "1" operation • Display = "X0100"	• Data are transmitted via the CAN-Bus comfort system ○ The Steering Column Electronic Systems Control Module J527 transmits the information on the current windshield wiper operating status

	○ Windscreen wiper speed "2" operation • Display = "X1000" ○ Windscreen wiper wipe/wash mode • Display = "10000" ○ Intended for windshield wiper operation via rain sensor (introduction not yet finalized)	

NOTE:

- **Depending on the position of the windshield wiper switch, several operating statuses may also be displayed simultaneously (e.g. "01001" for wipe/wash mode and intermittent operation).**
- **Depending on version, "1XXXX" may be displayed for vehicles without and with rain sensor with the windshield wipers switched on although it may not be raining (the operating and display module, Climatronic Control Module J255 assumes that it is raining and sets the display to "1XXXX" even though there is no signal from the rain sensor).**
- **The operating status information is required to regulate the evaporator outflow temperature and for vehicles with Air Quality Sensor G238.**

Display field	Meaning	Remarks
4	Signal transmitted by Fresh Air Blower Control Module J126 on operating status of Fresh Air Blower in % (duty cycle)	
	• Display = 45 to 54 % ○ Fresh Air Blower V2 and Fresh Air Blower Control Module J126 OK	• No faults present
	• Display = "0 to 10 %" ○ No signal from Fresh Air Blower Control Module J126	• Check for short to Ground (GND) or open circuit in wiring between Fresh Air Blower Control Module J126 and operating and display module, Climatronic Control Module J255

		• Open circuit in power supply to Fresh Air Blower Control Module J126 , check • Fresh Air Blower Control Module J126 defective, replace Fresh Air Blower V2 with Fresh Air Blower Control Module J126
	• Display = "15 to 24 %" ○ Switching relay (for solar operation) in Fresh Air Blower Control Module J126 defective	• Replace Fresh Air Blower V2 with Fresh Air Blower Control Module J126
	• Display = "25 to 34 %" ○ Voltage at Fresh Air Blower Control Module J126 too high	• Check power supply to Fresh Air Blower Control Module J126
	• Display = "35 to 44 %" ○ Voltage at Fresh Air Blower Control Module J126 too low	• Check and repair voltage supply and Ground (GND) connection to Fresh Air Blower Control Module J126

Display field	**Meaning**	**Remarks**
4	• Display = "55 to 64 %" ○ Fresh Air Blower V2 stiff or blocked	• Remove Fresh Air Blower V2 and check for obstruction • Replace Fresh Air Blower V2 with Fresh Air Blower Control Module J126
	• Display = "65 to 74 %" ○ Fresh Air Blower V2 stiff or blocked ○ Short circuit in Fresh Air Blower Control Module J126 or Fresh Air Blower V2	• Remove Fresh Air Blower V2 and check for obstruction • Replace Fresh Air Blower V2 with Fresh Air Blower Control Module J126
	• Display = "75 to 84 %"	• Activate activation of Fresh

	○ No activation signal from operating and display module, Climatronic Control Module J255 being applied to Fresh Air Blower Control Module J126 (e.g. air conditioner switched off)	Air Blower V2 at operating and display module, Climatronic Control Module J255 • Check for open circuit in wiring between Fresh Air Blower Control Module J126 and operating and display module, Climatronic Control Module J255
	○ Incorrect signal from Fresh Air Blower Control Module J126 (signal frequency outside permissible tolerance)	○ Fresh Air Blower Control Module J126 defective, replace Fresh Air Blower V2 with Fresh Air Blower Control Module J126
	• Display = "95 to 100 %" ○ No signal from Fresh Air Blower Control Module J126	• Check for short to positive in wiring between Fresh Air Blower Control Module J126 and operating and display module, Climatronic Control Module J255 • Fresh Air Blower Control Module J126 defective, replace Fresh Air Blower V2 with Fresh Air Blower Control Module J126

NOTE:

- **If activation of the Fresh Air Blower is OK and the Fresh Air Blower Control Module J126 does not detect any faults, the current Fresh Air Blower speed is transmitted via a square-wave signal to the operating and display module, Climatronic Control Module J255. With this square-wave signal the duty cycle is approx. 50% and the frequency 1/20 of the Fresh Air Blower speed (example: at a Fresh Air Blower speed of 3000 RPM the frequency of the square-wave signal is 150 Hertz or pulses per second).**
- **If a fault is detected by the Fresh Air Blower Control Module J126 , the Fresh Air Blower Control Module J126 transmits a square-wave signal with a frequency of 10 Hertz (pulses per second). The operating and display module, Climatronic Control Module J255 recognizes the fault detected via the duty cycle.**

Display group "019"

Code transmitted by Comfort System Central Control Module J393 and Instrument Cluster Control Module J285

Display field	Meaning	Remarks
1	Code transmitted by Comfort System Central Control Module J393 and Instrument Cluster Control Module J285 (code "1") • Display = "X.X XXX" ○ Remarks ○ Example: "0.0 000" = Vehicle for Germany with gasoline engine and Comfort System Central Control Module J393 for left-hand drive vehicle	• Data are transmitted via the CAN-Bus comfort system • If the code differs from the information in the table , check coding of Comfort System Central Control Module J393 and Instrument Cluster Control Module J285 (as well as part number and index of these control modules) "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.
2	Code transmitted by Instrument Cluster Control Module J285 (code "2") • Display = " X. X XXXX" ○ Remarks ○ Example: "00 0100" = Vehicle with 4-cyl. engine	• Data are transmitted via the CAN-Bus comfort system • If the code differs from the information in the table , check coding of Instrument Cluster Control Module J285 , "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.
3	Display field not used	
4	Display field not used	

Table of codes transmitted by instrument cluster (and adapted during "Basic setting" function) 1

Code					Meaning
Code transmitted by Comfort System Central Control Module J393					
0					Left-hand drive vehicle
1					Right-hand drive vehicle
					Fillers, No assignment
		Code transmitted by Instrument Cluster Control Module J285			
		0			Vehicle with

					gasoline engine
		1			Vehicle with diesel engine
					Fillers, No assignment
				000	Vehicle for Germany
				001	Vehicle for Europe (except Germany and Great Britain)
				010	Vehicle for USA
				011	Vehicle for Canada
				100	Vehicle for Great Britain
				101	Vehicle for Japan
				110	Vehicle for Saudi Arabia
				111	Vehicle for Australia

NOTE:

- **The codes "Germany" , "Europe" , "Canada" or "Great Britain" are used for other vehicle systems. There are no differences between them at present with respect to the air conditioner. With this code, the "air recirculation" function is erased on switching off the ignition and the temperature display in the instrument cluster and the operating and display module, Climatronic Control Module J255 is switched to °C (centigrade). The temperature display unit in the operating and display module, Climatronic Control Module J255 can be altered --> Climatronic Control Module J255 , removing and installing.**
- **If the code for "Japan" is transmitted by the Instrument Cluster Control Module J285 , the "air recirculation" function remains stored when the ignition is switched off and, after switching on the ignition with this key, the operating and display module, Climatronic Control Module J255 switches to recirculated-air mode again.**
- **If the code for "USA" is transmitted by the Instrument Cluster Control Module J285 , air conditioner regulation is set to somewhat "cooler" and the temperature display is switched to °F (Fahrenheit). The temperature display unit in the operating and display module, Climatronic Control Module J255 can be altered --> Climatronic Control Module J255 , removing and installing.**
- **If the code for "Australia" or "Saudi Arabia" is transmitted by the**

Instrument Cluster Control Module J285 , air conditioner regulation is set to somewhat "cooler".

- **The heating of the coolant after a cold start calculated by the operating and display module, Climatronic Control Module J255 differs depending on engine version.**
- **Proceed as follows if the coding of the operating and display module, Climatronic Control Module J255 must be switched for example to a different country version (e.g. to USA characteristic curve, regulation somewhat cooler in summer) without changing the code in the Instrument Cluster Control Module J285 :**

- Alter the coding in the Instrument Cluster Control Module J285 to the desired code (e.g. for USA).
- Perform basic setting of operating and display module, Climatronic Control Module J255.
- Alter the coding in the Instrument Cluster Control Module J285 back to the original code.

Table of codes transmitted by Instrument Cluster Control Module J285 and adapted during "Basic setting" function (codes "2")

Code					Meaning
0					No assignment ○ Not displayed with all versions.
					Fillers, No assignment
				Code transmitted by Instrument Cluster Control Module J285	
		0			Vehicle with no auxiliary heater ○ Setting in adaptation channel "18" of Instrument Cluster Control Module J285 "Guided Fault-Finding" Vehicle Diagnosis,

					Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
		1			Vehicle with auxiliary heater ○ Not available on US vehicles
					Fillers, No assignment
				0100	Vehicle with 4-cyl. engine
				0110	Vehicle with 6-cyl. engine
				1000	Vehicle with 8-cyl. engine

NOTE:

- **The heating of the coolant after a cold start calculated by the operating and display module, Climatronic Control Module J255 differs depending on engine version.**

Measuring value blocks from display group "020"

Display group "020"

Position of thumb wheel for Drivers Seat Heating Element, actual and specified temperature of heater element in driver seat cushion (Drivers Heated Seat Temperature Sensor G59) and activation of heater element in driver seat cushion (Drivers Seat Heating Element Z6)

NOTE:

- **This display group need only be observed for vehicles with heated seat cushions.**

Display field	Meaning	Remarks
1	Position of thumb wheel for Drivers Seat Heating Element (installed in operating and display module, Climatronic Control Module J255)	• Display depends on position of thumb wheel ○ Heated seat cushion is

	• Display = "Off (or less than 10%)" ○ Heated seat cushion switched off • Display = "10 to 100%" ○ Heated seat cushion switched on	activated if actual temperature in driver seat is lower than specified temperature

NOTE:

- **The position of the thumb wheel is determined in the operating and display module, Climatronic Control Module J255 by way of a potentiometer (variable resistor). Tolerances in this potentiometer make it impossible to determine a fixed value for the respective position.**

Display field	Meaning	Remarks
2	Actual temperature of driver seat cushion heater element in °C measured by Drivers Heated Seat Temperature Sensor G59	• Display depends on temperature of driver seat cushion

NOTE:

- **In the event of an open circuit in the wiring to the Drivers Heated Seat Temperature Sensor G59 or in the actual Drivers Heated Seat Temperature Sensor G59 , an actual temperature of less than -30 °C (e.g. -49 °C) is displayed as substitute value and the seat heating is does not switch on.**
- **The seat heater elements (heater elements for seat cushion, backrest and side bolsters) are differently wired. Depending on the design of the seat heating system, the side bolsters may still be heated in the event of an open circuit in the seat cushion heater element, for example. As however the seat cushion (and thus the Drivers Heated Seat Temperature Sensor G59 in the seat) remains cold, heating of the side bolsters is not regulated. -->**
  - **74 - SEATS - UPHOLSTERY, COVERS**
  - **74 - SEATS - UPHOLSTERY, COVERS for BODY INTERIOR - CABRIOLET**
- **If the Generator (GEN) C is not generating sufficient current, the heat output of the seat heating system may be reduced by the operating and display module, Climatronic Control Module J255 or the seat heating completely deactivated. If the voltage at the operating and display module, Climatronic Control Module J255 is less than approx. 12.3 V (display group "017"), the output to the seat heater elements is no longer constantly connected but rather only pulsed (although the specified temperature has**

not yet been attained). The seat heating system is completely deactivated if the voltage is less than approx. 10.6 V.

Display field	Meaning	Remarks
3	Specified temperature of driver seat cushion heater element • Position of thumb wheel = "0" (seat heating off) ○ Specified temperature e.g. " - 41 to -61 °C " (or -99 °C) • Position of thumb wheel = "1" ○ Specified temperature e.g. " 16 to 21 °C " (or 18 to 24 ° C) • Position of thumb wheel = "2" ○ Specified temperature e.g. " 22 to 27 °C " (or 25 to 31 ° C) • Position of thumb wheel = "3" ○ Specified temperature e.g. " 28 to 34 °C " (or 32 to 38 ° C) • Position of thumb wheel = "4" ○ Specified temperature e.g. " 35 to 43 °C " (or 39 to 46 ° C) • Position of thumb wheel = "5" ○ Specified temperature e.g. " 44 to 54 °C " (or 47 to 60 °	• Display depends on position of thumb wheel for Drivers Seat Heating Element (display zone "1"). ○ The specified temperature displayed is governed by the version of the operating and display module, Climatronic Control Module J255 and may differ from the values given here.

	C) - Position of thumb wheel = "6" - Specified temperature e.g. " 55 to 69 °C " (or 61 to 69 ° C)	

NOTE:

- **If the thumb wheel is set to "0" , the display will be -41 to -61 (-99) °C. This ensures that the seat heating will not be activated in this position even at extreme temperatures.**
- **If the actual temperature measured (display zone "2") is higher than the specified temperature set (display zone "3") and the specified temperature displayed is below the temperature value indicated for this thumb wheel position, ignore the display in zone "3".**
- **The position of the thumb wheel is determined in the operating and display module, Climatronic Control Module J255 by way of a potentiometer (variable resistor). Tolerances in this potentiometer make it impossible to determine a fixed value for the respective position. The specified temperature displayed may therefore differ from the specified temperature given in the display zone.**
- **Depending on the version of the operating and display module, Climatronic Control Module J255 , the specified (seat cushion) temperature shown in the display zone for this thumb wheel position either switches to the given specified temperature on moving out of position "0" (-41 to -61 (-99 °C)) or the display does not switch from -41 to -61 (-99 °C) to the given specified (seat cushion) temperature until the specified temperature is higher than the actual temperature measured in the seat cushion.**

Display field	Meaning	Remarks

4	Activation for driver seat cushion heater element
	- Display = "Off"
	  - Heated seat cushion switched off
		- The actual driver seat temperature is higher than the desired specified temperature
		  - The actual driver seat temperature is lower than the desired specified temperature, but the electrical system voltage is too low (refer to notes on display zone "2")

	• Display = "On" ○ Heated seat cushion switched on	• The actual driver seat temperature is lower than the desired specified temperature

Display group "021"

Position of thumb wheel for Front Passengers Seat Heating Element, actual and specified temperature of heater element in front passenger seat cushion (Front Passengers Heated Seat Temperature Sensor G60) and activation of heater element in front passenger seat cushion (Front Passengers Seat Heating Element Z8)

NOTE:

- **This display group need only be observed for vehicles with heated seat cushions.**

Display field	Meaning	Remarks
1	Position of thumb wheel for Front Passengers Seat Heating Element (installed in operating and display module, Climatronic Control Module J255) • Display = "Off (or less than 10%)" ○ Heated seat cushion switched off • Display = "10 to 100%" ○ Heated seat cushion switched on	• Display depends on position of thumb wheel ○ Heated seat cushion is activated if actual temperature in front passenger seat is lower than specified temperature

NOTE:

- **The position of the thumb wheel is determined in the operating and display module, Climatronic Control Module J255 by way of a potentiometer (variable resistor). Tolerances in this potentiometer make it impossible to determine a fixed value for the respective position.**

Display field	Meaning	Remarks
2	Actual temperature of front passenger seat cushion heater element in °C measured by Front Passengers Heated Seat Temperature Sensor G60	• Display depends on temperature of front passenger seat cushion

NOTE:

- **In the event of an open circuit in the wiring to the Front Passengers Heated Seat Temperature Sensor G60 or in the actual Front Passengers Heated Seat Temperature Sensor G60 , an actual temperature of less than -30 °C (e.g. -49 °C) is displayed as substitute value and the seat heating is does not switch on.**
- **The seat heater elements (heater elements for seat cushion, backrest and side bolsters) are differently wired. Depending on the design of the seat heating system, the side bolsters may still be heated in the event of an open circuit in the seat cushion heater element, for example. As however the seat cushion (and thus the Front Passengers Heated Seat Temperature Sensor G60 in the seat) remains cold, heating of the side bolsters is not regulated. -->**
  - **74 - SEATS - UPHOLSTERY, COVERS**
  - **74 - SEATS - UPHOLSTERY, COVERS for BODY INTERIOR - CABRIOLET**
- **If the Generator (GEN) C is not generating sufficient current, the heat output of the seat heating system may be reduced by the operating and display module, Climatronic Control Module J255 or the seat heating completely deactivated. If the voltage at the operating and display module, Climatronic Control Module J255 is less than approx. 12.3 V (display group "017"), the output to the seat heater elements is no longer constantly connected but rather only pulsed (although the specified temperature has not yet been attained). The seat heating system is completely deactivated if the voltage is less than approx. 10.6 V.**

Display field	Meaning	Remarks
3	Specified temperature of front passenger seat cushion heater element - Position of thumb wheel = "0" (seat heating off) ○ Specified temperature e.g. " - 41 to -61 °C " (or -99 °C) - Position of thumb wheel = "1" ○ Specified temperature e.g. " 16 to 21 °C " (or 18 to 24 °C) - Position of thumb wheel = "2"	- Display depends on position of thumb wheel for Front Passengers Seat Heating Element (display zone "1"). ○ The specified temperature displayed is governed by the version of the operating and display module, Climatronic Control Module J255 and may differ from the values given here.

	○ Specified temperature e.g. " 22 to 27 °C " (or 25 to 31 °C) • Position of thumb wheel = "3" ○ Specified temperature e.g. " 28 to 34 °C " (or 32 to 38 °C) • Position of thumb wheel = "4" ○ Specified temperature e.g. " 35 to 43 °C " (or 39 to 46 °C) • Position of thumb wheel = "5" ○ Specified temperature e.g. " 44 to 54 °C " (or 47 to 60 °C) • Position of thumb wheel = "6" ○ Specified temperature e.g. " 55 to 65 °C " (or 61 to 69 °C)	

NOTE:

- **If the thumb wheel is set to "0" , the display will be -41 to -61 (-99) °C. This ensures that the seat heating will not be activated in this position even at extreme temperatures.**
- **If the actual temperature measured (display zone "2") is higher than the specified temperature set (display zone "3") and the specified temperature displayed is below the temperature value indicated for this thumb wheel position, ignore the display in zone "3".**
- **The position of the thumb wheel is determined in the operating and display module, Climatronic Control Module J255 by way of a potentiometer (variable resistor). Tolerances in this potentiometer make it impossible to determine a fixed value for the respective position. The specified temperature displayed may therefore differ from the specified temperature given in the display zone.**

- **Depending on the version of the operating and display module, Climatronic Control Module J255 , the specified (seat cushion) temperature shown in the display zone for this thumb wheel position either switches to the given specified temperature on moving out of position "0" (-41 to -61 (-99 °C)) or the display does not switch from -41 to -61 (-99 °C) to the given specified (seat cushion) temperature until the specified temperature is higher than the actual temperature measured in the seat cushion.**

Display field	Meaning	Remarks
4	Activation for front passenger seat cushion heater element • Display = "Off" ○ Heated seat cushion switched off	• The actual front passenger seat temperature is higher than the desired specified temperature ○ The actual front passenger seat temperature is lower than the desired specified temperature, but the electrical system voltage is too low (refer to notes on display zone "2")
	• Display = "On" ○ Heated seat cushion switched on	• The actual front passenger seat temperature is lower than the desired specified temperature

Display groups "022" to "025"

Display groups not used at present

Display groups "026" and "027"

Ambient conditions under which pressure in refrigerant circuit was last not OK

NOTE:

- **If no malfunction has been detected since the DTC memory was last erased, the display zones of the display groups "026" and "027 " indicate, depending on the version of the operating and display module, Climatronic Control Module J255 , "erased" for example.**

Display group "026"		
Display field	Meaning	Remarks
1	Deactivation fault location	○ No fault in signal from High Pressure Sensor G65

	- Display =.... (blank) or "erased"	detected since DTC memory last erased
	- Display = "0819"	○ The High Pressure Sensor G65 has supplied a pressure signal which could not be evaluated ○ The pressure in the refrigerant circuit was too high or too low

NOTE:

- **The display "0819" is the DTC code for the malfunction location High Pressure Sensor G65.**
- **Display field "1" may, depending on the hardware/software version of the operating and display module, Climatronic Control Module J255 , display a different DTC code instead of "0819". This DTC code can then be ignored.**

Display group "026"

Display field	Meaning	Remarks
2	Pressure in bar (absolute pressure) in refrigerant circuit when fault occurred, calculated by way of pressure signal from High Pressure Sensor G65	- Evaluation of pressure (display group "001")
3	Activation in % of Coolant Fan V7 when fault occurred (specified output requested by operating and display module, Climatronic Control Module J255)	- Evaluation of activation (display group "014")
4	Activation in % transmitted from relevant engine control module to Coolant Fan Control (FC)Control Module J293 for Coolant Fan V7 when fault occurred (feedback of specified output requested) ○ There is no display on vehicles with operating and display module, Climatronic Control Module J255 up to hardware/software version "0202"	- Evaluation of feedback (display group "014")

Display group "027"

Display field	Meaning	Remarks

1	Calculated ambient temperature in °C when fault occurred, transmitted by Instrument Cluster Control Module J285	- Evaluation of display (display group "010")
2	Vehicle speed in km/h when fault occurred, transmitted by Instrument Cluster Control Module J285	- Evaluation of display (display group "012")
3	Coolant temperature in °C when fault occurred, transmitted by Instrument Cluster Control Module J285	- Evaluation of display (display group "011")
4	Display field not used	

Display group "028"

Display of adaptation channels for which setting has been changed by way of "Adaptation" function

NOTE:

- **This display group is not used with operating and display modules, Climatronic Control Module J255 up to part number index "AH" (installed in vehicles up to VIN 399999 in Model Year 2005 for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN).**
- **A maximum of 4 altered adaptation channels are displayed with operating and display modules, Climatronic Control Module J255 with part number index "AJ" onwards (installed in vehicles as of VIN 400000 in Model Year 2005 for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN). If changes have been made to the factory setting in more than 4 adaptation channels, these are no longer displayed (if applicable, reset adaptation of all adaptation channels by way of "Adaptation" function in adaptation channel "20" to factory setting --> Climatronic Control Module J255, Adaptation (function 10)).**

Display field	Meaning	Remarks
1	- Display = "0" (or display zone blank) ○ No changes have been made to adaptation or all changes made have been reset to factory setting by way of "Adaptation" function in adaptation channel "20"	- The display sequence for the adaptation channels with altered setting is governed by the adaptation performed and the version of the operating and display module, Climatronic Control Module J255

	• Display = "XX" ○ Changes have been made to setting in at least one adaptation channel ○ Setting in this adaptation channel has been altered, check adaptation set --> **Climatronic Control Module J255, Adaptation (function 10)**	
2 to 4	• Display = "0" (or display zone blank) ○ No (or max. one, two or three) change(s) made to adaptation or all changes made have been reset to factory setting by way of "Adaptation" function in adaptation channel "20" • Display = "XX" ○ Changes have been made to setting in at least two, three or four adaptation channels ○ Setting in this adaptation channel has been altered, check adaptation set --> **Climatronic Control Module J255, Adaptation (function 10)**	• The display sequence for the adaptation channels with altered setting is governed by the adaptation performed and the version of the operating and display module, Climatronic Control Module J255

Display group "081"

Vehicle VIN transmitted by Instrument Cluster Control Module J285 and, depending on version of operating and display module, Climatronic Control Module J255 , certain items of information from Instrument Cluster Control Module J285

Display field	Meaning	Remarks
1	• Operating and display unit, Climatronic Control Module J255 up to hardware/software version	

	"0610" ○ Display field not used	
	• Operating and display unit, Climatronic Control Module J255 as of hardware/software version "0711" ○ VIN first transmitted on initial commissioning of operating and display module, Climatronic Control Module J255 or after last adaptation of operating and display module, Climatronic Control Module J255 by Instrument Cluster Control Module J285 and stored in operating and display module, Climatronic Control Module J255.	• Data are transmitted via the CAN-Bus comfort system • New replacement operating and display modules, Climatronic Control Module J255 are supplied without VIN coding • If the VIN displayed does not coincide with that transmitted by the Instrument Cluster Control Module J285 , the fault "Control module incorrect Vehicle Identification Number (VIN)" is stored in the operating and display module, Climatronic Control Module J255. • If an operating and display module, Climatronic Control Module J255 is installed in a different vehicle, the old VIN must be erased via the "Adaptation" function --> **Climatronic Control Module J255, Adaptation (function 10)**
2 to 4	Display fields not used with all versions of operating and display module, Climatronic Control Module J255 ○ Intended for information transmitted by Instrument Cluster Control Module J285 (such as assembly, serial and type approval number)	No significance for service work at present

Display group "125"

Information on CAN-Bus comfort system and operating status of CAN-Bus comfort system

Display field	Meaning	Remarks
1	Information from Instrument Cluster Control Module J285 • Display = "Instrument panel 0" ○ No messages received from Instrument Cluster Control Module J285 (also observe notes on this display zone) • Display = "Instrument panel 1" ○ Messages from Instrument Cluster Control Module J285 being received	• Data are transmitted via the CAN-Bus comfort system • If "0" is displayed, check the DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and check the CAN-Bus comfort system --> **CAN-Bus comfort system, checking**
2	Information from Comfort System Central Control Module J393 • Display = "Central 0" ○ Messages from Comfort System Central Control Module J393 not being received • Display = "Central 1" ○ Messages from Comfort System Central Control Module J393 being received	• Data are transmitted via the CAN-Bus comfort system • If "0" is displayed, check the DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and check the CAN-Bus comfort system --> **CAN-Bus comfort system, checking**

NOTE:

- **On operating and display modules, Climatronic Control Module J255 with part No. index up to "G" (up to software version "XX14"), display zone "1" may indicate instrument panel "0" for certain optional extras even if the message is being properly received. With this version, "1" is only displayed if certain items of information (e.g. "telephone operation voice recognition" function of Instrument Cluster Control Module J285) are being transmitted.**
- **If, with an operating and display module, Climatronic Control Module J255 up to part number index "G" (up to software version "XX14"), display zone "1" indicates instrument panel "0" and display group "126" zone "4"**

indicates two-wire operation, check display in Instrument Cluster Control Module J285. If the measuring value block (currently display group "131") indicates "AC 1" , the CAN-Bus comfort system is OK. The malfunction "Instrument Cluster Control Module No communication/SP" can then be ignored "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.

Display field	Meaning	Remarks
3	Information from Vehicle Electrical System Control Module J519 • Display = "el. CE. 0" ○ Messages from Vehicle Electrical System Control Module J519 not being received • Display = "el. CE. 1" ○ Messages from Vehicle Electrical System Control Module J519 being received	• Data are transmitted via the CAN-Bus comfort system • If "0" is displayed, check the DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and check the CAN-Bus comfort system --> **CAN-Bus comfort system, checking**
4	Information from Steering Column Electronic Systems Control Module J527 • Display = "Steering wheel 0" ○ Messages from Steering Column Electronic Systems Control Module J527 not being received • Display = "Steering wheel 1" ○ Messages from Steering Column Electronic Systems Control Module J527 being received	• Data are transmitted via the CAN-Bus comfort system • If "0" is displayed, check the DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and check the CAN-Bus comfort system --> **CAN-Bus comfort system, checking**

Display group "126"

Information from Convertible Top Control Module J256 and information on operating status of CAN-Bus comfort system

Display field	Meaning	Remarks
2	Information from Convertible Top Control Module J256 • Display = "Convertible top 0" ○ Messages from Convertible Top Control Module J256 not being received ○ This display can be ignored if applicable for Saloon, Avant and Coupe (control unit is only installed on Cabrio) • Display = "Convertible top 1" ○ Messages from Convertible Top Control Module J256 being received	• Data are transmitted via the CAN-Bus comfort system • If "0" is displayed for Cabrio, check the DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and check the CAN-Bus comfort system --> **CAN-Bus comfort system, checking** ○ If applicable, check and correct coding of operating and display module, Climatronic Control Module J255 on Saloon, Avant and Coupe.
	• Display = n. installed	• The operating and display module, Climatronic Control Module J255 has been coded for a vehicle with no convertible top (Saloon, Avant or Coupe). If applicable, check coding of operating and display module, Climatronic Control Module J255.

NOTE:

- **With the Audi Cabrio, different settings are stored for closed and open convertible top in the operating and display module, Climatronic Control Module J255. On opening and closing the convertible top, the operating and display module, Climatronic Control Module J255 then automatically alters the setting to the value last set with convertible top closed or open.**
- **As of Model Year 2003, operating and display modules, Climatronic Control Module J255 with part number index "H" onwards (with software version as of "XX16") have gradually been installed. This operating and display module, Climatronic Control Module J255 differs as follows from**

the model with software version "XX15" :

- **- Modified passenger compartment temperature regulation for Audi Cabrio and open convertible top (designed to be somewhat cooler)**
- **- Extended temperature adjustment range; 16 °C (instead of 18 °C) is now the lowest temperature which can be set**

Display field	Meaning	Remarks
3	Display field not used ○ Operating and display unit, Climatronic Control Module J255 with part number index up to "G" (up to software version "XX14") and index "AJ" onwards	
	Information from Instrument Cluster Control Module J285 ○ Operating and display unit, Climatronic Control Module J255 with part number index "H" onwards (as of software version "XX15") up to index "AH" • Display = "Voice 0" ○ No telephone hands-free unit installed in vehicle and "telephone operation voice recognition" module thus not transmitted. ○ Telephone hands-free unit installed in vehicle, however adaptation of appropriate control units not implemented as specified. ○ Telephone hands-free unit installed in vehicle, "telephone operation voice recognition" module not transmitted or received since switching on ignition.	• Data are transmitted via the CAN-Bus comfort system • If "0" is displayed for vehicles with telephone hands-free unit, start up telephone with hands-free unit if applicable. If display does not change: ○ check DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)**. ○ Check adaptation of Instrument Cluster Control Module J285 and Telephone/Telematics Control Module J526 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052 ○ Check CAN-Bus comfort system --> **CAN-Bus comfort system, checking**.

	- Display = "Voice 1" - Telephone hands-free unit installed in vehicle, "telephone operation voice recognition" module received.	

NOTE:

- **This display zone indicates that the message received by the Instrument Cluster Control Module J285 via the CAN-Bus comfort system contains a module for the "telephone operation voice recognition" function.**
- **The information "telephone operation voice recognition" is currently only transmitted for vehicles with a factory-installed telephone hands-free unit. Depending on the vehicle version, the information may however only be transmitted if the voice input button has been pressed at least once or the telephone used at least once since switching on the ignition.**
- **Depending on the version of the operating and display module, Climatronic Control Module J255 , the information "Voice 1" is only displayed while information is actually being received via the CAN-Bus comfort system.**

Display field	Meaning	Remarks

4	Operating status of CAN-Bus comfort system
	- Display = "two-wire"
	  - CAN-Bus comfort system in two-wire mode (normal status)
	  - Reception of information transmitted on CAN-Bus comfort system at both inputs ("Can-Hi" and "Can-Lo")
	- Display = "one-wire"
	  - CAN-Bus comfort system in one-wire mode (emergency operation)
	  - Reception of information transmitted on CAN-Bus comfort system at one input
		- Data are transmitted on the CAN-Bus comfort system via two signal wires.
		  - If "one-wire" is displayed, check the DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and check the CAN-Bus comfort system --> **CAN-Bus comfort system, checking**

	only ("Can-Hi" or "Can-Lo")	

NOTE:

- **In contrast to the drive CAN-Bus system, the CAN-Bus comfort system can also operate in one-wire mode. However the system is then set to emergency operation.**
- **If information is not received on the CAN-Bus comfort system, the operating and display module, Climatronic Control Module J255 does not activate the A/C Compressor Regulator Valve N280 (compressor off).**

Display groups currently not to be used by dealerships

NOTE:

- **Depending on the version of the operating and display module, Climatronic Control Module J255 , there may not be any display in these measuring value blocks or the display zone may have a black background.**

Display group number	Display field	Description
080	1	Manufacturer and factory code
	2	Date of manufacture of operating and display module, Climatronic Control Module J255
	3	Manufacturers modification status of operating and display module, Climatronic Control Module J255
	4	Number of test bench on which operating and display module, Climatronic Control Module J255 was checked at the factory
	5	Manufacturers serial number

Display group number	Display field	Description
082	1	Display field not used at present ◦ Intended for flash tool number of data version in operating and display module, Climatronic Control Module J255
	2	Display field not used at present ◦ Intended for date on which last flash was implemented for operating and display module, Climatronic

		Control Module J255 (flash = input of new data)
	3	Display field not used at present ◦ Intended for (electronics) hardware version of operating and display module, Climatronic Control Module J255
	4	Display field not used at present ◦ Intended for software version (electronics data version) of operating and display module, Climatronic Control Module J255

Display group number	Display field	Description
127	1	Network management version number ◦ Operating level of CAN-Bus comfort system
	2	Communication matrix version ◦ Data level used by dominant control unit for convenience CAN-Bus system (Instrument Cluster Control Module J285)
	3	Communication matrix version in operating and display module, Climatronic Control Module J255 ◦ Data level of operating and display module, Climatronic Control Module J255 with which information is transmitted on CAN-Bus comfort system and expected by other control units
	4	Display field not used

CLIMATRONIC CONTROL MODULE J255, ADAPTATION (FUNCTION 10)

Overview of designated adaptation channels

NOTE:

- **Adaptation channels "01" , "02" , "06" and "07" are in effect only for vehicles in which the auxiliary heater is installed as optional equipment. Since the auxiliary heater is not available in the USA, these adaptations are to be disregarded in the USA.**
- **Adaptation channels "08" , "09" and "81" are only provided for operating and display modules, Climatronic Control Module J255 as of hardware/software version "0711".**
- **Adaptation channels "10" to "16" are only provided for operating and display modules, Climatronic Control Module J255 as of hardware/software version "1323" (gradual introduction at the factory as of 09.03).**
- **Adaptation channels "17" to "19" , "21" to "80" and "82" onwards are not used at present.**
- **Adaptation channel "20" is only used with operating and display modules, Climatronic Control Module J255 with part number index "AJ" onwards (intended for resetting of all altered settings to factory adaptation). Such operating and display modules, Climatronic Control Module J255 are installed on vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN).**
- **If the setting entered in adaptation channel "03" is "0" , a note must be made in the vehicle documentation to the effect that the A/C Compressor Regulator Valve N280 can no longer be deactivated by the engine control module via the "air conditioner compressor shutoff" function.**

Adaptation channel	Basic setting from manufacturer	Function	Changing basic setting
03	1 (on)	Compressor shutoff by engine control unit via "Air conditioner compressor shutoff" function • In basic setting "1" , the A/C Compressor Regulator Valve N280 (and thus the compressor) is switched off as soon as the request is received from the engine control	--> **Adaptation in various adaptation channels (except adaptation channels "08" and "81"), performing**

		module via the CAN-Bus comfort system (e.g. on acceleration) (Reading measuring value block, display group "002") - The adaptation function can be used to suppress deactivation of the A/C Compressor Regulator Valve N280 because of "air conditioner compressor shutoff" by changing the adaptation to "0" (the operating and display module, Climatronic Control Module J255 ignores the request)	
04	0 * See note	Engine/air conditioner compressor transmission ratio - Adaptation cannot be altered; assignment is specified in operating and display module, Climatronic Control Module J255. - The assignment to the relevant engine is transmitted via the CAN-Bus comfort system	

* Depending on version of operating and display module, Climatronic Control Module J255 and engine

Adaptation channel	Basic setting from manufacturer	Function	Changing basic setting
05	1	Extended air conditioner requirement - Adaptation cannot be altered; assignment is specified in operating and display module, Climatronic Control Module J255.	

Adaptation channel	Basic setting from manufacturer	Function	Changing basic setting
08	3480 or 6400 * See note	Reduction of Fresh Air Blower speed on voice recognition - To improve voice recognition and the clarity of telephone voice input, the Fresh Air Blower speed is reduced to the set value on vehicles as of Model Year 2002 (with operating and display module, Climatronic Control Module J255 as of hardware/software version "0711"). The reduction takes effect as soon as the message "Telephone voice input" is transmitted via the CAN-Bus comfort	--> **Adaptation of fresh air blower RPM decrease, performing (adaptation channel 08)**

		system. ◦ In setting "6800" , the maximum Fresh Air Blower speed is reduced to approx. 25 % ◦ In the adjustment range "3480" (approx. 15%) to "22528" (approx. 88%), "256" units correspond to roughly 1% more or less reduction	

* Depending on version of operating and display module, Climatronic Control Module J255 , "3480" (approx. 15%) or "6800" (approx. 25%)

Adaptation channel	Basic setting from manufacturer	Function	Changing basic setting
09	118 (corresponds to 11.8 V)	Undervoltage shutoff value for "Auxiliary ventilation" function ◦ With operating and display modules, Climatronic Control Module J255 installed at the start of production, this value cannot yet be altered (gradual introduction) • In setting "118" , the "auxiliary ventilation" function is deactivated at a voltage of 11.8 V by the operating and display module,	--> **Adaptation in various adaptation channels (except adaptation channels "08" and "81"), performing**

		Climatronic Control Module J255. - To ensure reliable engine starting, the voltage should never be adapted to a value less than 11.3 V (input "113").	

Adaptation channel	Basic setting from manufacturer	**Function**	Changing basic setting
16	0	Adaptation of air flow to footwell in cooling mode (summer mode) in "Auto" setting on operating and display module, Climatronic Control Module J255 - This function is only provided for operating and display modules, Climatronic Control Module J255 as of hardware/software version "1323" (gradual introduction at the factory as of 09.03). - In "Auto" mode, No cooled air is routed into the footwell in cooling mode (this is designed to prevent excessive cooling of the foot area) - In setting "0" , the air flow to the	--> **Adaptation in various adaptation channels (except adaptation channels "08" and "81"), performing**

		footwell corresponds to that stored for this setting in the operating and display module, Climatronic Control Module J255 in line with the ambient conditions (corresponds to setting "2") - In setting "1" , a greater volume of cooled air is routed to the footwell (the footwell flap is also opened slightly in cooling mode in line with the stored characteristic control curve). - In setting "2" , only a small volume of cooled air is routed into the footwell (the footwell flap is closed in cooling mode; this setting is currently active with all settings).	

Adaptation channel	Basic setting from manufacturer	**Function**	Changing basic setting
20	0	Resetting of all changes made to settings at operating and display module, Climatronic Control Module J255 - This function is only provided for operating and display modules,	--> **Adaptation in various adaptation channels (except adaptation channels "08" and "81"), performing**

		Climatronic Control Module J255 with part number index "AJ" onwards (installed in vehicles as of VIN 400000 in Model Year 2005 for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN). • If "0" is displayed, all adjustable adaptation values are in the factory setting. ○ No changes have been made to adaptation in adaptation channels "01" to "16" of operating and display module, Climatronic Control Module J255 ○ Any changes made to settings have been reset via the "Adaptation" function • If "1" is displayed, at least one factory-set adaptation has been altered. ○ Changes have been made to adaptation in adaptation channels "01" to	

		"16" of operating and display module, Climatronic Control Module J255 ○ The adaptation channels in which changes have been made to the adaptation are displayed in the measuring value block, display group "028" ○ To reset all altered settings, change the adaptation in this adaptation channel to "0" if applicable	

Adaptation channel	Basic setting from manufacturer	**Function**	Changing basic setting
81		Adaptation of VIN • The "Adaptation" function must be performed for operating and display modules, Climatronic Control Module J255 as of hardware/software version "0711" for which the malfunction "Control module incorrect Vehicle Identification Number (VIN)" is displayed.	--> **Adaptation of Vehicle Identification Number (VIN), performing (adaptation channel "81")**

Adaptation in various adaptation channels (except adaptation channels "08" and "81"), performing

- Check DTC memory of operating and display module, Climatronic Control Module J255 --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and eliminate any faults displayed.
- Check coding of operating and display module, Climatronic Control Module J255 for vehicle-specific optional extras and correct if necessary --> **Climatronic Control Module J255, coding (function 07)**.

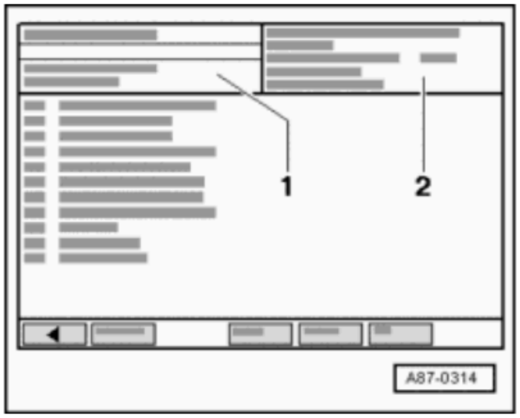

Fig. 26: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- Select function "10 - Adaptation".

Indicated on display of Diagnostic Operation System VAS 5051A :

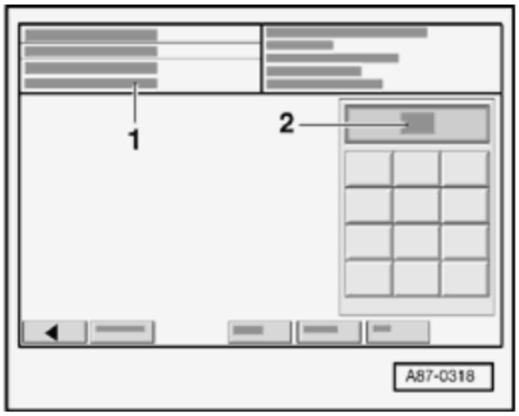

Fig. 27: Identifying Diagnostic Operation System VAS 5051A (Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Prompt for entering channel number appears in display zone - **1** -.
- Input keypad appears in display zone - **2** -.

- Use input keypad to enter desired channel number in display zone - **2** - --> **Overview of designated adaptation channels** (list of adaptation channels) and confirm by touching Q key.

NOTE:

- **Possible causes if display zone - 1 - indicates "Function unknown or cannot be implemented at present" :**
- **- Control unit adaptation not performed as specified and in full**
- **- Malfunction on CAN-Bus comfort system**

Indicated on display of Diagnostic Operation System VAS 5051A :

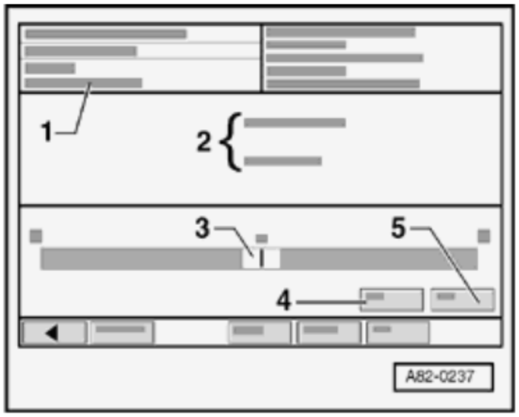

Fig. 28: Identifying Diagnostic Operation System VAS 5051A "Channel X Reading And Testing", Set Value & Code Number
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Channel X reading and testing".
- Currently set value for this function appears in area - **2** -.
- Area - **3** - displays bar with code number for currently valid setting.

  - Bar can be used to alter setting within specified limits.

NOTE:

- **Code numbers entered via bar which are not within specified limits are displayed but not implemented.**
- **If code number entered via bar is too high or too low, display is automatically reset.**
- **New value set for this adaptation channel appears in area - 2 -.**

Entry can also be made by way of keypad.

  - Touch key - **4** - (for entry via keypad).

Indicated on display of Diagnostic Operation System VAS 5051A :

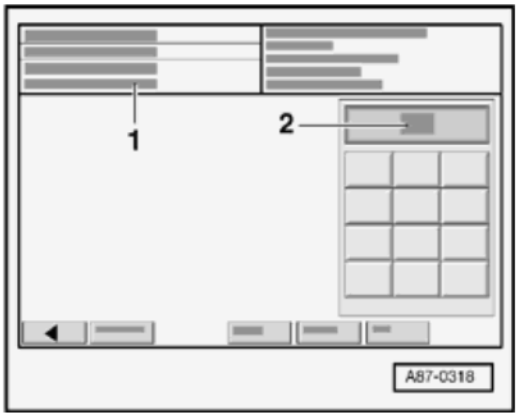

Fig. 29: Identifying Diagnostic Operation System VAS 5051A (Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Enter adaptation value: 0 to XXXXX".
- Input keypad appears in display zone - **2** -.

- Use input keypad to enter the desired value for this adaptation channel in the display zone --> **Overview of designated adaptation channels** (list of available adaptation channels) for re-adaptation of the operating and display module, Climatronic Control Module J255.

NOTE:

- **Code numbers entered via keypad which are not within specified limits are displayed but not implemented.**
- **If code number entered via keypad is too high or too low, display is automatically reset.**
- **Code number entered appears in area - 2 -.**

- Confirm entry by touching "Q key".

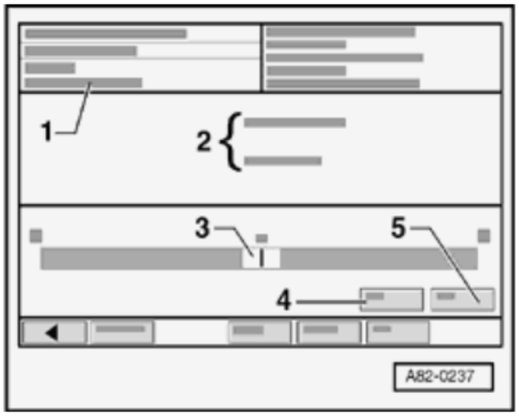

Fig. 30: Identifying Diagnostic Operation System VAS 5051A "Channel X Reading And Testing", Set Value & Code Number
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- New value for this adaptation channel appears in area - **2** -.
- Code number entered appears above bar in area - **3** -.

- ○ Store entry by touching key - **5** -.

Indicated on display of Diagnostic Operation System VAS 5051A :

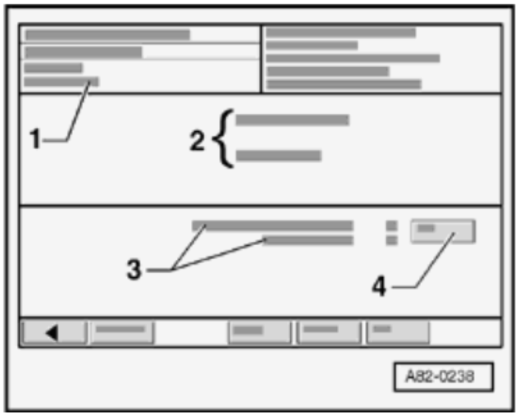

Fig. 31: Identifying Diagnostic Operation System VAS 5051A Display "Store Channel X", Original/New Code Number & New Value For Adaptation Channel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Store channel X".
- New value for this adaptation channel appears in area - **2** -.
- Original and new code number for this adaptation channel appear in area - **3** -.

- ○ Adopt and store entry by touching key - **4** -.

- Display field - **1** - indicates "Store channel X, value 0 to XXXX stored".

NOTE:

- **Code numbers entered which are not within specified limits are displayed but not implemented.**
- **If code number entered is too high or too low, display is automatically reset.**
- **Touch <-- key to return to selection program.**

- ○ Terminate On Board Diagnostic (OBD) --> **End Output (function 06)** and switch off ignition.
- ○ Check function of new adaptation entered.

Adaptation of fresh air blower RPM decrease, performing (adaptation channel 08)

NOTE:

- **To improve voice recognition and the clarity of telephone voice input, the**

Fresh Air Blower speed is reduced on vehicles as of Model Year 2002 (with operating and display module, Climatronic Control Module J255 as of hardware/software version "0711").

- **The reduction takes effect as soon as the message "Telephone voice input" is transmitted via the CAN-Bus comfort system.**
- **The reduction time is limited to max. 2 minutes.**
- **The amount by which the Fresh Air Blower speed is reduced depends on the air outflow direction and the Fresh Air Blower speed when the "Telephone voice input" signal is received. The greater the proportion of air routed to the instrument panel vents, the more the speed is reduced.**
- **Reduction of the Fresh Air Blower speed takes effect as of approx. 40% air distribution to the instrument panel vents. The maximum reduction takes place with 100% air to the instrument panel vents.**
- **In the basic setting, the Fresh Air Blower speed with 100% air to the instrument panel vents is limited to 15 % (or 25 %) of the maximum Fresh Air Blower speed depending on the version of the operating and display module, Climatronic Control Module J255. This restriction can be reduced or cancelled via the "Adaptation" function in adaptation channel "8".**
- **To obviate the need for several workshop visits, it is appropriate after changing the adaptation to discuss the "Voice input" function with customers on vehicle hand over with regard to the desired reduction of the Fresh Air Blower speed with 100% air from the instrument panel vents and to try this out if applicable.**

Adaptation procedure

- Check DTC memory of operating and display module, Climatronic Control Module J255 --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and eliminate any other malfunctions displayed.
- Check coding of operating and display module, Climatronic Control Module J255 for vehicle-specific optional extras and correct if necessary --> **Climatronic Control Module J255, coding (function 07)**.

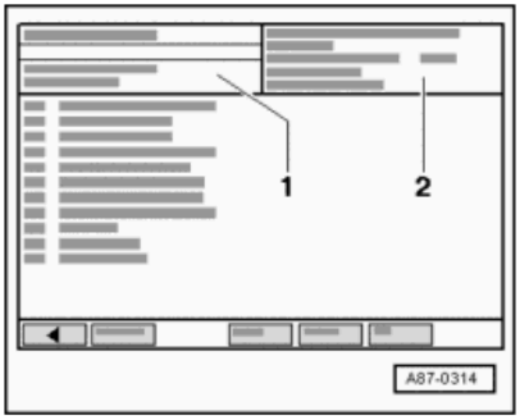

Fig. 32: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- Select function "10 - Adaptation".

Indicated on display of Diagnostic Operation System VAS 5051A :

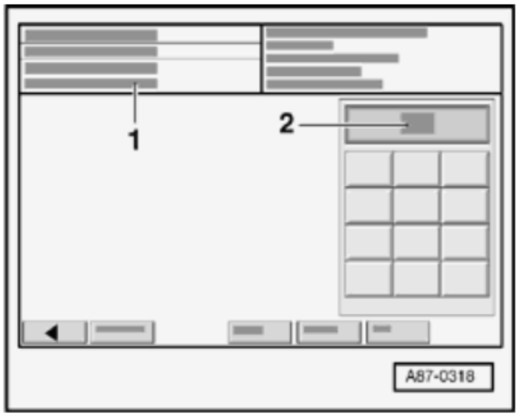

Fig. 33: Identifying Diagnostic Operation System VAS 5051A (Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Prompt for entering channel number appears in display zone - **1** -.
- Input keypad appears in display zone - **2** -.

- Use input keypad in display zone - **2** - to enter "8" for channel "08" and confirm by touching Q key.

NOTE:

- **Possible causes if display zone - 1 - indicates "Function unknown or cannot be implemented at present" :**
- **- Control unit adaptation not performed as specified and in full**
- **Malfunction on CAN-Bus comfort system**

Indicated on display of Diagnostic Operation System VAS 5051A :

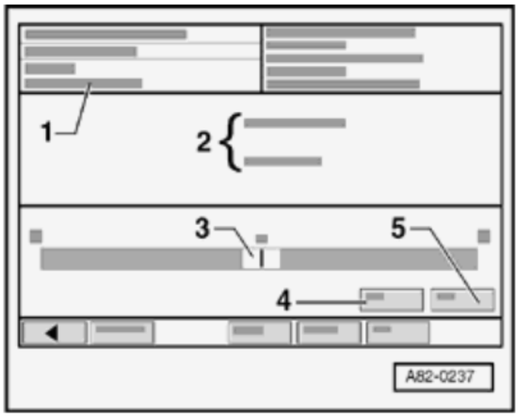

Fig. 34: Identifying Diagnostic Operation System VAS 5051A "Channel X Reading And Testing", Set Value & Code Number
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Channel 8 reading and testing".
- Display in area - **2** - is e.g. "25%".
- A bar appears in area - **3** - with a code number for the currently valid maximum Fresh Air Blower speed (e.g. "6800" for 25%).

  - The bar can be used to alter the Fresh Air Blower speed with telephone operation in the range between 15% to 88%.

NOTE:

- **If the bar is used to enter a code number corresponding to a maximum Fresh Air Blower speed of less than 15% or greater than 88%, the code number is displayed but not implemented.**
- **If the keypad is used to enter a code number greater than approx. "32600" , the display is automatically reset to 15% or 25 %.**
- **New value set for maximum Fresh Air Blower speed with telephone operation appears in area - 2 -.**

Basic factory setting: 15% or 25 % (code number currently "6800" for 25 %)

Maximum Fresh Air Blower speed setting with voice recognition: 15% to 88% (code number currently "3840" to "22528")

Entry can also be made by way of keypad.

  - Touch key - **4** - (for entry via keypad).

Indicated on display of Diagnostic Operation System VAS 5051A :

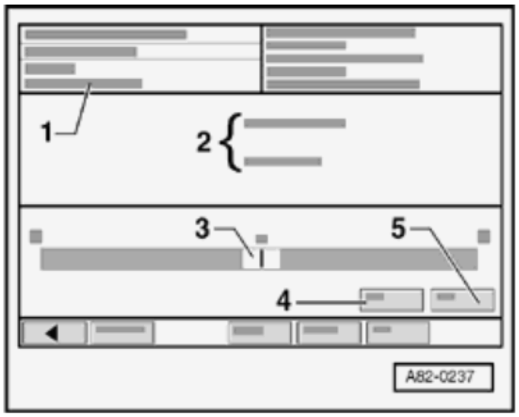

Fig. 35: Identifying Diagnostic Operation System VAS 5051A "Channel X Reading And Testing", Set Value & Code Number
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Enter adaptation value: 0 to XXXXX".
- Input keypad appears in display zone - **2** -.

- Use input keypad to enter the desired value in the display zone for the maximum Fresh Air Blower speed with "Telephone voice input" function for re-adaptation of the operating and display module, Climatronic Control Module J255.

Basic factory setting: 15% or 25 % (code number currently "6800" for 25 %)

Maximum Fresh Air Blower speed setting with telephone operation: 15% to 88 % (code number currently "3840" to "22528")

NOTE:

- **There is no further reduction of the Fresh Air Blower speed in the 88% setting. In this setting, problems may be encountered with voice recognition and clarity of telephone voice input at maximum Fresh Air Blower speed with air routing to the instrument panel vents.**
- **If the keypad is used to enter a code number corresponding to a maximum Fresh Air Blower speed of less than 15% or greater than 88%, the code number is displayed but not implemented.**
- **If the keypad is used to enter a code number greater than approx. "32600" , the display is automatically reset to 15% or 25 %.**
- **Reduction of the Fresh Air Blower speed takes effect as of approx. 40% air distribution to the instrument panel vents. The maximum reduction takes place with 100% air to the instrument panel vents.**
- **Code number entered appears in area - 2 -.**

- Confirm entry by touching Q key.

Indicated on display of Diagnostic Operation System VAS 5051A :

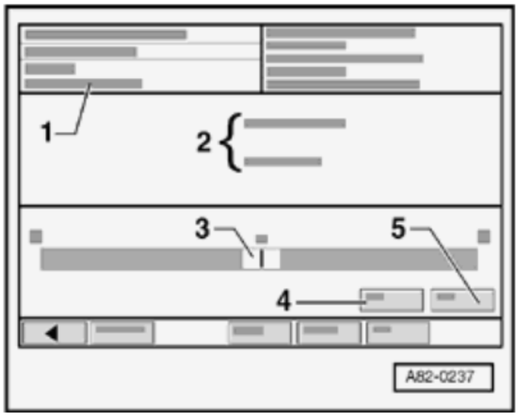

Fig. 36: Identifying Diagnostic Operation System VAS 5051A "Channel X Reading And Testing", Set Value & Code Number
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- New value for Fresh Air Blower speed with telephone operation appears in area - **2** -.
- Code number entered appears above bar in area - **3** -.

- Store entry by touching key - **5** -.

Indicated on display of Diagnostic Operation System VAS 5051A :

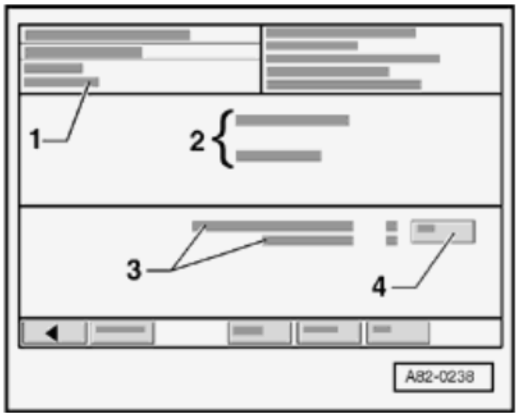

Fig. 37: Identifying Diagnostic Operation System VAS 5051A Display "Store Channel X", Original/New Code Number & New Value For Adaptation Channel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Store channel 8".
- New value for Fresh Air Blower speed with telephone operation appears in area - **2** -.
- Original and new code number for maximum Fresh Air Blower speed with telephone operation appear in area - **3** -.

- Adopt and store entry by touching key - **4** -.

- Display field - **1** - indicates "Store channel 8, value 0 to XXXX stored".

NOTE:

- **If a code number corresponding to a maximum Fresh Air Blower speed of less than 15% or greater than 88% is entered, the code number is displayed but not implemented.**
- **If a code number higher than approx. "32600" is entered, it is ignored by the operating and display module, Climatronic Control Module J255 and 15% or 25 % is stored.**
- **Touch <-- key to return to selection program.**
- **Check voice recognition with newly entered Fresh Air Blower speed reduction.**

- Terminate On Board Diagnostic (OBD) --> **End Output (function 06)** and switch off ignition.

Check voice input and telephone voice recognition as follows:

- Start engine.
- On operating and display module, Climatronic Control Module J255 , select "Maximum Fresh Air Blower speed" and "air distribution to instrument panel vents" functions or "Defrost" function.
- Open all instrument panel vents.
- Check function of voice input and telephone voice recognition in this setting.

Adaptation of Vehicle Identification Number (VIN), performing (adaptation channel "81")

NOTE:

- **The "Adaptation" function must be performed for operating and display modules, Climatronic Control Module J255 as of hardware/software version "0711" for which the malfunction "Control module incorrect Vehicle Identification Number (VIN)" is displayed.**
- **New replacement operating and display modules, Climatronic Control Module J255 are supplied without VIN coding. The first time the ignition is switched on following installation, the VIN transmitted via the CAN-Bus comfort system is read into the operating and display module, Climatronic Control Module J255 (as of hardware/software version "0711") and stored (anti-theft protection).**
- **If an operating and display module, Climatronic Control Module J255 (as of hardware/software version "0711") is installed in a different vehicle (e.g. swapped over), the transmitted and stored VINs no longer coincide and the malfunction "Control module incorrect Vehicle Identification Number (VIN)" is stored in the operating and display module, Climatronic Control Module J255. Entering the PIN in the adaptation function erases the VIN stored in the operating and display module, Climatronic Control Module J255.**
- **The operating and display module, Climatronic Control Module J255 can only be adapted by entering the specified PIN.**

Requirements

- Battery fully charged
- Check coding in Instrument Cluster Control Module J285 ; this corresponds to vehicle model and equipment "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.
- Check VIN. The correct VIN for the vehicle must have been stored in the Instrument Cluster Control Module J285 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.

Adaptation procedure

- Check DTC memory of operating and display module, Climatronic Control Module J255 --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and rectify any other malfunctions displayed (fault "Control module incorrect Vehicle Identification Number (VIN)" cannot be erased at this stage).

- Check coding of operating and display module, Climatronic Control Module J255 for vehicle-specific optional extras and correct if necessary --> **Climatronic Control Module J255, coding (function 07)**.

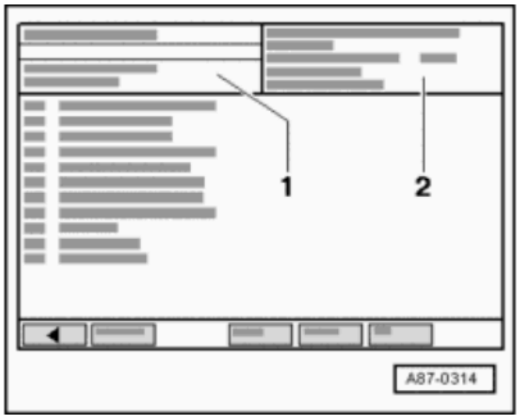

Fig. 38: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- Select function "10 - Adaptation".

Indicated on display of Diagnostic Operation System VAS 5051A :

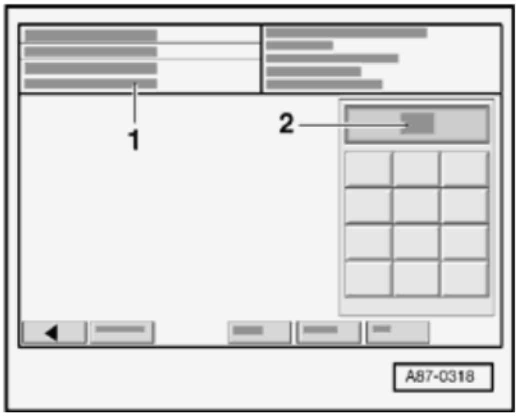

Fig. 39: Identifying Diagnostic Operation System VAS 5051A (Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Prompt for entering channel number appears in display zone - **1** -.
- Input keypad appears in display zone - **2** -.

- Use input keypad in display zone - **2** - to enter "81" for channel "81" and confirm by touching Q key.

NOTE:

- **Possible causes if display zone - 1 - indicates "Function unknown or cannot be implemented at present" :**

- **- Control unit adaptation not performed as specified and in full**
- **- Malfunction on CAN-Bus comfort system**
- **If display zone - 1 - indicates "Disabled" and disable time (e.g. "10" for 10 minutes), the adaptation function is currently not available due to having been incorrectly implemented several times.**
- **Wait for completion of disable time.**

Indicated on display of Diagnostic Operation System VAS 5051A :

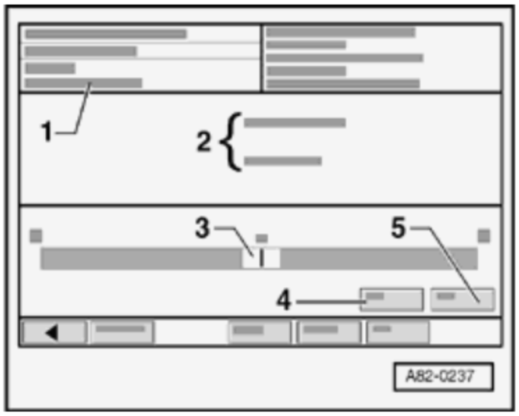

Fig. 40: Identifying Diagnostic Operation System VAS 5051A "Channel X Reading And Testing", Set Value & Code Number
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Channel 81 reading and testing".
- Display in area - **2** - is "PIN ?".
- A bar appears in area - **3** - (not to be used for this application).

  - Touch key - **4** - (for entry via keypad).

Indicated on display of Diagnostic Operation System VAS 5051A :

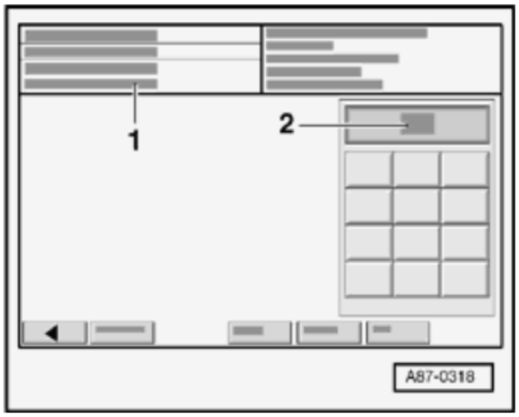

Fig. 41: Identifying Diagnostic Operation System VAS 5051A (Prompt For Entering Display Group

Appears In Display Zone & Input Keypad Appears In Display Zone)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Enter adaptation value: 0 to XXXXX".
- Input keypad appears in display zone - **2** -.

- ○ Use input keypad in display zone - **2** - to enter PIN for re-adaptation of operating and display module, Climatronic Control Module J255.

PIN: "26467"

- PIN entered appears in area - **2** -.

- ○ Confirm entry by touching Q key.

Indicated on display of Diagnostic Operation System VAS 5051A :

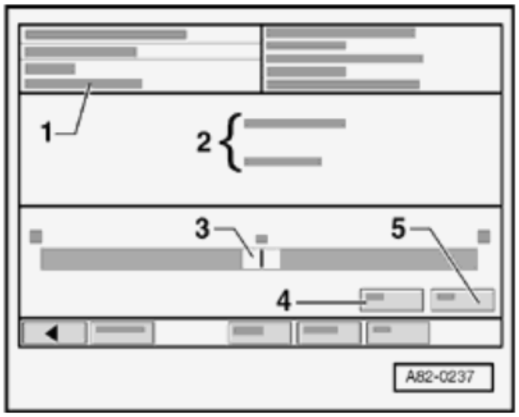

Fig. 42: Identifying Diagnostic Operation System VAS 5051A "Channel X Reading And Testing", Set Value & Code Number
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The PIN entered appears above the bar in area - **3** -.

- ○ Store entry by touching key - **5** -.

Indicated on display of Diagnostic Operation System VAS 5051A :

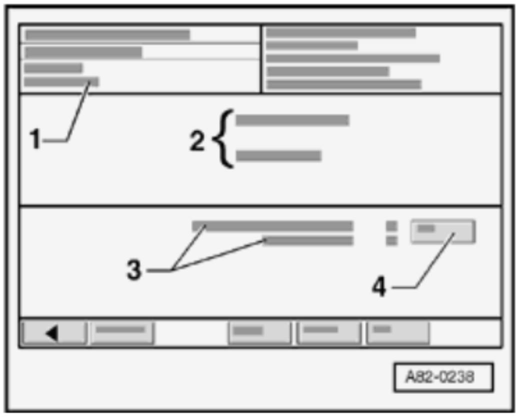

Fig. 43: Identifying Diagnostic Operation System VAS 5051A Display "Store Channel X", Original/New Code Number & New Value For Adaptation Channel
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates "Store channel 81".
- Area - **3** - displays the original PIN or "0" and the new PIN.

- Adopt and store entry by touching key - **4** -.

- Display field - **1** - indicates "Store channel 1, value 1 stored".

NOTE:

- **Touch <-- key to return to selection program.**
- **Entering the PIN erases the VIN stored in the operating and display module, Climatronic Control Module J255. The operating and display module, Climatronic Control Module J255 is then ready to adopt the VIN transmitted by the Instrument Cluster Control Module J285 via the CAN-Bus comfort system.**

- Terminate On Board Diagnostic (OBD) --> **End Output (function 06)** and switch off ignition.
- Start engine.
- Check DTC memory of operating and display module, Climatronic Control Module J255 --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and erase faults displayed --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)**.

The malfunction "Control module incorrect Vehicle Identification Number (VIN)" is no longer displayed or can now be erased (if adaptation has been performed correctly).

- Check the VIN now stored in the operating and display module, Climatronic Control Module J255 (Reading measuring value block, display group "081").

CAN-BUS COMFORT SYSTEM, CHECKING

CAN-Bus system, function

CAN-Bus:

CAN-Bus is the term used to describe a data transfer and distribution system.

There are various CAN-Bus systems in the Audi A4. These systems operate on different levels. The Instrument Cluster Control Module J285 forms the interface (gateway) between the various CAN-Bus systems.

CAN:

The "Controller Area Network" is a CAN-Bus system employing two wires. These are referred to as CAN-Bus wires. Data are transmitted serially via the CAN-Bus wires to the connected control modules.

These control units communicate with the aid of the CAN-Bus systems, i.e. they use the CAN-Bus systems to exchange information (data). 186 The CAN-Bus

- The CAN-Bus comfort system
  - Operates at a transmission rate of 100 kbaud (100000 data units per second)
  - Continues to operate even in the event of failure of one of the two wires, however only in emergency operation (e.g. because of an open circuit).
  - Examples of connected control modules:
  - Instrument Cluster Control Module J285 (interface with drive CAN-Bus system)
  - Air conditioner operating and display module, Climatronic Control Module J255
  - Steering Column Electronic Systems Control Module J527
  - For further control units linked to the CAN-Bus comfort system, refer to **CAN-Bus comfort system, checking**
- The drive CAN-Bus system
  - Operates at a transmission rate of 500 kbaud (500000 data units per second)
  - Only operates if data can be transferred on both wires (safety configuration)
  - Examples of connected control modules:
  - Instrument Cluster Control Module J285 (interface with CAN-Bus comfort system)
  - Relevant engine control module
  - For further control units linked to the drive CAN-Bus system, refer to **CAN-Bus comfort system, checking**

NOTE:

- **"CAN-Bus" is the term used to describe a data transfer and distribution system.**
- **Depending on vehicle equipment, various control modules may be linked to the convenience or drive CAN-Bus system.**

- **The data are transferred simultaneously in the CAN-Bus systems via the "CAN-Hi" and "CAN-Lo" signal wires (two-wire bus data systems). Depending on the version of the CAN-Bus system, these wires may form twisted pairs to minimize interference from other systems. They may also be screened against the other wires.**
- **The wires between the control units which are used to transmit data are referred to as signal wires.**
- **These signal wires are used for serial transmission of data to the connected control modules. The data cannot be checked using workshop equipment.**
- **The data are transmitted and received by the various control modules at regular intervals. The interval between two data blocks transmitted by a control unit is governed by the priority of the data transferred and is between 0.01 and 0.2 seconds long.**
- **If a connected control unit does not receive any information within a specified period or if the data received cannot be evaluated, a fault is stored in the DTC memory.**
- **The reception of the information is displayed for example for the air conditioner in the measuring value block, display groups "125" and "126".**
- **If a control module cannot provide the data required (or just one item of information) because of a component fault, a DTC message is transmitted together with the data requesting readout of the DTC memory in this control unit.**
- **Example:**
- **- The Outside Air Temperature Sensor G17 is not connected and the Instrument Cluster Control Module J285 can therefore not transmit the measured value of this sensor in its data.**
- **The Instrument Cluster Control Module J285 saves this fault and sets a malfunction in its data instead of the measured value.**
- **The operating and display module, Climatronic Control Module J255 detects the DTC message on evaluating the data block and saves the information "Instrument Cluster Control Module, read out DTC memory" in the DTC memory.**

CAN-Bus comfort system, checking

NOTE:

- **If the connector of one of the control units linked to the CAN-Bus comfort system has been disconnected and the ignition is switched on, a fault entry may be made in the other control units linked to the CAN-Bus comfort system. This also applies if the power supply is interrupted, for example by removing a fuse.**
- **The Instrument Cluster Control Module J285 forms the interface between the two CAN-Bus systems. It is also the dominant control unit in the CAN-**

Bus comfort system. The control units connected to the CAN-Bus comfort system in the vehicle (equipment-specific) are entered in this control unit via the adaptation function "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.

- **The wiring diagrams can be used to establish the number of control units linked to the CAN-Bus comfort system.**

Isolating possible malfunction causes

NOTE:

- **The following malfunction locations and types apply to the CAN-Bus comfort system:**
- **"Group CAN-Bus comfort system"**
- **- Fault: Data cannot be transferred via the CAN-Bus system**
- **- In one-wire mode: Data cannot be transmitted on one of the two CAN-Bus wires ("CAN-Hi " or "CAN-Lo")**
- **- Missing messages (time out for several control modules): No data received within the specified time period from one or more control units (Instrument Cluster Control Module J285 , Vehicle Electrical System Control Module J519 , Steering Column Electronic Systems Control Module J527 or Comfort System Central Control Module J393)**
- **- No communication: No data received from Instrument Cluster Control Module J285 , Comfort System Central Control Module J393 , Vehicle Electrical System Control Module J519 and/or Steering Column Electronic Systems Control Module J527**
- **- Check DTC memory: Instrument Cluster Control Module J285 , Comfort System Central Control Module J393 , Vehicle Electrical System Control Module J519 or Steering Column Electronic Systems Control Module J527 cannot transmit information because of a malfunction in an upstream component.**
- **- No communication: No data received from Convertible Top Control Module J256 (prior to further fault-finding, check coding of Instrument Cluster Control Module J285 and operating and display module, Climatronic Control Module J255)**
- **- Check DTC memory: Convertible Top Control Module J256 cannot transmit information because of a malfunction in an upstream component**
- **"Drive CAN-Bus"**
- **- Check DTC memory: Instrument Cluster Control Module J285 cannot output information because of a malfunction in a control unit which transmits data on the drive CAN-Bus system (Check DTC memory of Instrument Cluster Control Module J285) "Guided fault-finding" function of Diagnostic Operation System and "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service**

Syst. VAS5052

Determining malfunction in CAN-bus comfort system

- With the ignition switched off, connect Diagnostic Operation System VAS 5051A e.g. using Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or, on vehicles up to VIN 399999 in Model Year 2005 for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN , K-Lead Adapter VAS 6017A) to the 16-pin diagnostic socket in the vehicle --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.
- Switch ignition on.
- Select function "00 - checking DTC memory - Entire system".

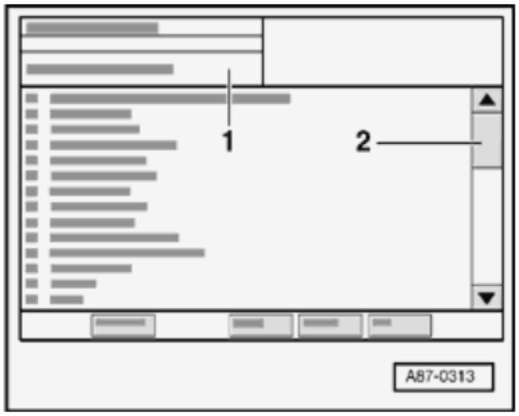

Fig. 44: Identifying Vehicle System Selection Prompt & "Scrolling" Bar
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

All address words stored in the Diagnostic Operation System VAS 5051A are now consecutively transmitted to the vehicle via the signal wire.

Indicated on display of Diagnostic Operation System VAS 5051A :

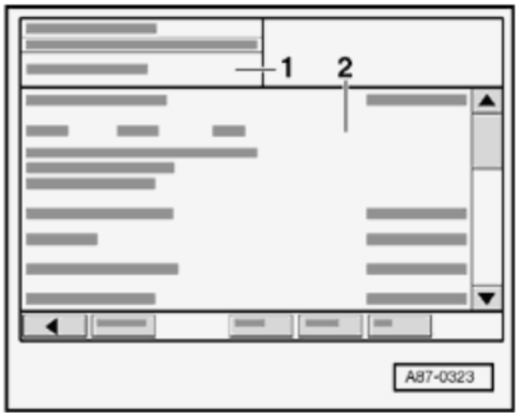

Fig. 45: Identifying Display Of Diagnostic Operation System VAS 5051A Indicates Address Word Currently Being Transmitted & Shows Which Control Units Have Responded
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Display field - **1** - indicates the address word currently being transmitted by the Diagnostic Operation System VAS 5051A.
- Display field - **2** - shows which control units have responded. The number and type of DTC memory in this control unit are also displayed.

- Wait until display zone - **1** - indicates "Function completed".

NOTE:

- **If a different or an additional fault has been stored in a control unit with which the other control units cannot exchange data, rectify this fault before checking the CAN-Bus wire system.**
- **In the event of a malfunction in a control unit, there may be problems with the exchange of data with the other control units although this fault does not directly affect the CAN-Bus system.**
- **Check the part number and the corresponding index of the control unit with which there is no communication.**

Malfunction(s) on the CAN-bus comfort system are only indicated by the operating and display module, Climatronic Control Module J255

- Check coding of operating and display module, Climatronic Control Module J255 --> **Climatronic Control Module J255, coding (function 07)** and Instrument Cluster Control Module J285 "Guided fault-finding" function of Diagnostic Operation System VAS 5051 and "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.
- Check signal wires to operating and display module, Climatronic Control Module J255 for open circuit or wiring resistance. Wiring resistance: max. 1.5 ohms

NOTE:

- **Pay particular attention to the possibility of loose contacts in the wires and connectors.**

If no malfunction can be found, the problem is in the operating and display module, Climatronic Control Module J255.

Malfunctions on the CAN-bus comfort system are indicated in another control module

- Check the signal wires and the corresponding screening between the various control modules linked to the CAN-Bus comfort system for open circuit and wiring resistance. Wiring resistance: max. 1.5 ohms
- Check the signal wires and the corresponding screening between the various control modules linked to the CAN-Bus comfort system for mutual short circuit or short to Ground (GND)/positive. "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

NOTE:

- **Pay particular attention to the possibility of loose contacts in the wires and connectors.**
- **If this malfunction is not displayed for all connected control modules, the problem may be an open circuit at a connection in the wiring.**

If no malfunction can be found and this malfunction is displayed for all control units linked to the CAN-Bus comfort system, the problem is in one of the connected control modules.

- Check version, coding and adaptation entered for the Instrument Cluster Control Module J285. , "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
- Check version and coding of other control units linked to the CAN-Bus comfort system (e.g. Vehicle Electrical System Control Module J519 , Steering Column Electronic Systems Control Module J527). , "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
- Disconnect all control units except the Instrument Cluster Control Module J285 (interface with drive CAN-Bus system) and the Steering Column Electronic Systems Control Module J527 from the CAN-Bus comfort system
- Erase DTC memory of Instrument Cluster Control Module J285 "Guided fault-finding" function of Diagnostic Operation System VAS 5051 and "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052
- Check DTC memory of Instrument Cluster Control Module J285 and Steering Column Electronic Systems Control Module J527 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.

If the malfunction in the CAN-Bus comfort system is now no longer displayed, the problem is in one of the disconnected control modules.

- Consecutively reconnect the various control modules.
- Check the DTC memory after connecting each control unit.
- Replace the control unit following installation of which the malfunction is displayed again.

If the malfunction in the CAN-Bus comfort system is still displayed, there is a problem with the Instrument Cluster Control Module J285 or the Steering Column Electronic Systems Control Module J527.

- Disconnect the Steering Column Electronic Systems Control Module J527 and connect a different control module (e.g. operating and display module, Climatronic Control Module J255).
- Check DTC memory of Instrument Cluster Control Module J285 again.

NOTE:

- **The defective control module can be established by disconnecting the Steering Column Electronic Systems Control Module J527 and connecting a different control module.**

- Replace the defective control unit.

AUTOMATIC CLIMATE CONTROL SYSTEM, ELECTRICAL TESTING

Wiring and component check using Test Box V.A.G 1598A

Special tools and equipment

- Test Box V.A.G 1598A as well as corresponding Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12
- Diagnostic Operation System VAS 5051A with Multimeter Leads VAS 5051/7 , Dso Measuring Leads 1 2 VAS 5051/8 and Inductive Pickup (50 Amp) VAS 5051/9
- Voltage tester V.A.G 1527 B
- Connector Test Set V.A.G 1594C

- Temperature measuring instrument (commercially available)

NOTE:

- **During vehicle On Board Diagnostic (OBD), there must not be any Test Box V.A.G 1598A adapters connected to the operating and display module, Climatronic Control Module J255.**

Connect Test Box V.A.G 1598A to wiring harness connectors of Climatronic Control Module J255

- Switch off ignition.
- Remove operating and display module, Climatronic Control Module J255.

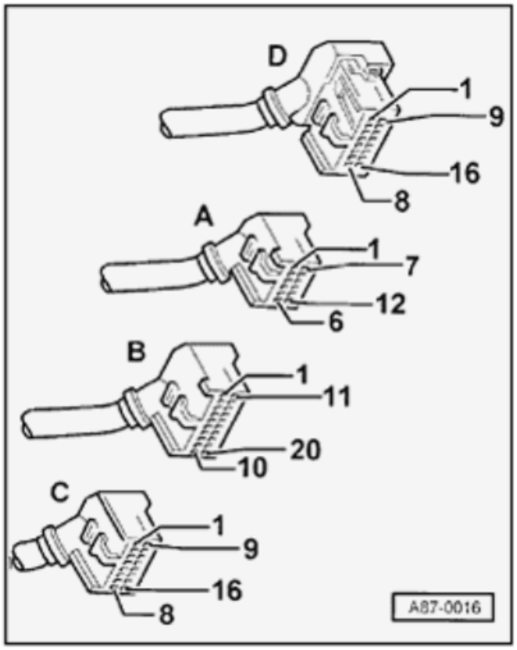

Fig. 46: VAG 1598 Test Box With VAG 1598/11 And VAG 1598/12 Adapter Cables

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12 to disconnected connectors of operating and display module, Climatronic Control Module J255.

NOTE:

- **Do not connect operating and display module, Climatronic Control Module J255.**
- **For measurement, connect the Test Box V.A.G 1598A to the relevant adapter.**
- **The assignment of the sockets on the Adapter - 16 Terminals V.A.G 1598/12 is identical to the pin assignment of the operating and display module, Climatronic Control Module J255.**
- **The assignment of the sockets on the Adapter V.A.G 1598/11 is not identical to the pin assignment of the operating and display module, Climatronic Control Module J255.**

Socket assignment for Test Box V.A.G 1598A with Adapter V.A.G 1598/11

NOTE:

- **The terminal assignment of the connectors "A" and "B" for the Adapter V.A.G 1598/11 is not identical to the assignment of the sockets at the Test Box V.A.G 1598A.**
- **The terminal assignment of the connector "C" for the Adapter V.A.G 1598/11 is identical to the assignment of the sockets at the Test Box V.A.G 1598A.**
- **The terminal assignment of the connector "D" for the Adapter - 16 Terminals V.A.G 1598/12 is identical to the assignment of the sockets at the Test Box V.A.G 1598A.**
- **As the connectors to the operating and display module, Climatronic Control Module J255 are distributed over two adapters (Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12), there is no Ground (GND) connection for test purposes with the Adapter V.A.G 1598/11 connected. When performing electrical checks, it is therefore necessary for various test steps to take measurements with respect to a suitable Ground (GND) point on the vehicle body or to use a second Test Box V.A.G 1598A (with the Adapter - 16 Terminals V.A.G 1598/12 connected, Ground (GND) is applied to socket "13").**

Connector "A" Terminal	Test Box V.A.G 1598A socket	Connector "B" Terminal	Test Box V.A.G 1598A socket	Connector "B" Terminal	Test Box V.A.G 1598A socket
1	41	1	21	13	33
2	42	2	22	14	34
3	43	3	23	15	35
4	44	4	24	16	36

5	45	5	25	17	37
6	46	6	26	18	38
7	47	7	27	19	39
8	48	8	28	20	40
9	49	9	29		
10	50	10	30		
11	51	11	31		
12	52	12	32		

Checking

NOTE:

- **All fuses OK**
- **Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12 connected to disconnected connectors of operating and display module, Climatronic Control Module J255**

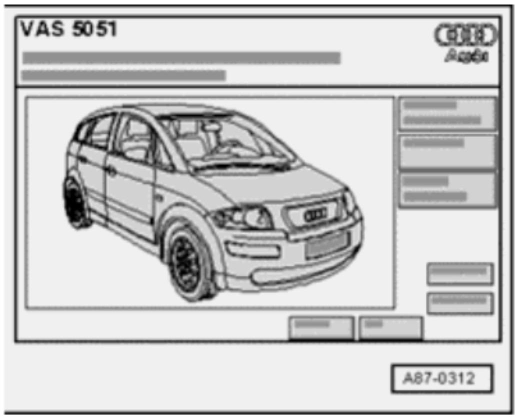

Fig. 47: Diagnostic System VAS 5051: Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- On Diagnostic Operation System VAS 5051A , set "Measurement" mode.

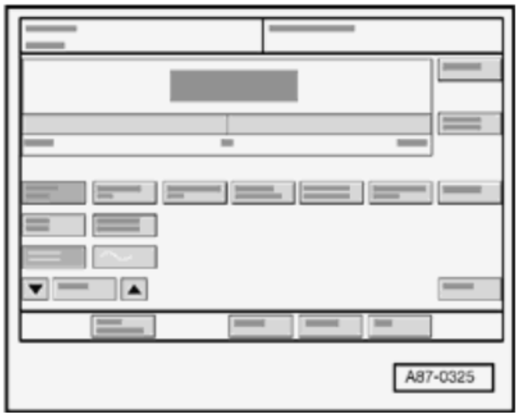

Fig. 48: Selecting Measurement Mode Required In Various Test Steps On Diagnostic Operation System

VAS 5051A
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Select the measurement mode required in the various test steps on the Diagnostic Operation System VAS 5051A by touching the appropriate key on the display of the Diagnostic Operation System VAS 5051A.

Electrical tests (to be performed on Climatronic Control Module J255), overview

NOTE:

- **Various items of information are transmitted via the CAN-Bus comfort system (reading measuring value block --> Read Measuring Value Block (function 08)). There are no electrical checks provided for this information.**

Test step	Component tested	Refer to
1	• Voltage supply and Ground (GND) connection of operating and display module, Climatronic Control Module J255	
2	• Fresh Air Intake Duct Temperature Sensor G89 • Right Vent Temperature Sensor G151 , Front Vent Temperature Sensor G152 , Left Footwell Vent Temperature Sensor G261 , Right Footwell Vent Temperature Sensor G262 , Evaporator Vent Temperature Sensor G263	
3	• Wiring to Fresh Air Blower Control Module J126 and Fresh Air Blower V2	
4	• Positioning motors for climate control system and potentiometers - Central Air Flap Motor V70/Central Flap Motor Position Sensor G112 , Air Flow Flap Motor V71/Back Pressure Flap Motor Position Sensor G113 , Defroster Flap Motor V107/Defroster Flap Motor Position Sensor G135 , Recirculation Flap Motor V113/Recirculation Flap Motor Position Sensor G143 , Left Temperature Flap Motor V158/Left Temperature Flap Potentiometer/Actuator G220 , Right Temperature Flap Motor V159/Right Temperature Flap Potentiometer/Actuator G221	
5	• Pressure signal from High Pressure Sensor G65	
6	• Activation for A/C Compressor Regulator Valve N280	
7	• Signal from Sunlight Photo Sensor G107	

Test steps "1" to "4"

Test step "1"

Voltage supply and Ground (GND) connection of operating and display module, Climatronic Control Module J255

Diagnostic Operation System VAS 5051A , Multi-meter, voltage measurement (20 V =)

- **Adapter - 16 Terminals V.A.G 1598/12 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
1.1	12 + 13	• Terminal "30" and Ground (GND) connection at operating and display module, Climatronic Control Module J255	• Ignition switched off	• approx. Battery voltage	○ Use wiring diagram to repair voltage supply/Ground (GND) connection
1.2	16 + 13	• Ground (GND) connection at operating and display module, Climatronic Control Module J255	• Ignition switched on	• 0 V	○ Use wiring diagram to locate and eliminate short to positive in Ground (GND) connection (signal Ground (GND))
1.3	12 + 16	• Ground (GND) connection at operating and display module, Climatronic Control Module J255	• Ignition switched on	• 0 V	○ Use wiring diagram to locate and eliminate short to Ground (GND) in Ground (GND) connection (signal Ground (GND))

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, voltage measurement (20 V =)

- **Adapter V.A.G 1598/11 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
1.4	13 + Ground (GND) * See note	Terminal "75" at operating and display module, Climatronic Control Module J255	• Ignition switched on	• approx. Battery voltage	○ Use wiring diagram to repair voltage supply to operating and display module, Climatronic Control Module J255
1.5	34 + Ground (GND) * See note	• Ground (GND) connection at operating and display module, Climatronic Control Module J255	• Ignition switched on	• 0 V	○ Use wiring diagram to locate and eliminate short to positive in Ground (GND) connection (signal Ground (GND))
1.6	13 + 34	• Ground (GND) connection at operating and display module, Climatronic Control Module J255	• Ignition switched on	• 0 V	○ Use wiring diagram to locate and eliminate short to Ground (GND) in Ground (GND) connection (signal Ground

					(GND))

* Ground (GND) is applied to connector "D" , contact "13".

Test step "2"

Temperature sensors/sensors

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (20kohms/200 kohms)

- **Adapter V.A.G 1598/11 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
2.1	30 + 34	Fresh Air Intake Duct Temperature Sensor G89	• Ignition switched off ○ Measure temperature at sensor installation	• Depending on temperature at sensor installation	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or contact resistance
2.2	31 + 34	Evaporator Vent Temperature Sensor G263			○ Replace temperature sensor
2.3	28 + 34	Left Footwell Vent Temperature Sensor G261			
2.4	29 + 34	Right Footwell Vent Temperature Sensor G262			

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (20kohms/200 kohms)

- **Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12 connected**

Test step	Test Box V.A.G	Test of	• Test requirements	Specified value	Corrective actions for

	1598A socket		○ **Additional operations**		**deviations from specification**
2.5	1 (1598/11) + 16 (1598/12)	Left Vent Temperature Sensor G150	• Ignition switched off ○ Measure temperature at sensor installation	• Depending on temperature at sensor installation	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or contact resistance
2.6	2 (1598/11) + 16 (1598/12)	Right Vent Temperature Sensor G151			○ Replace sensor

NOTE:

- **The wiring to these sensors terminates at different connectors. Use is therefore either to be made of a second Test Box V.A.G 1598A or the measuring instrument must be connected using a suitable test lead from the Connector Test Set V.A.G 1594C directly to the Adapter - 16 Terminals V.A.G 1598/12.**

Temperature-depending resistance values sensors/sensors

Temperature measured at installation of temperature sensor in " °C "	Resistance of Fresh Air Intake Duct Temperature Sensor G89 (and also Outside Air Temperature Sensor G17) in "kohms"	Resistance of Right Vent Temperature Sensor G151 , Front Vent Temperature Sensor G152 , Left Footwell Vent Temperature Sensor G261 , Right Footwell Vent Temperature Sensor G262 in "kohms"	Resistance of Evaporator Vent Temperature Sensor G263 in "kohms"
- 30	18.10	(141.00)	(52.20)
- 20	9.95	(85.00)	(27.75)
-10	5.59	(47.00)	(15.50)
0	3.28	29.00	9.00
5	2.54	23.20	6.96

10	1.99	18.60	5.44
15	1.57	15.00	4.28
20	1.25	12.20	3.40
25	1.00	10.00	2.72
30	0.80	8.20	2.19
35	0.65	6.80	1.78
40	0.53	5.70	1.46
50	0.36	4.00	1.00
60	0.25	2.90	0.69

Test step "3"

Voltage supply and wiring to Fresh Air Blower Control Module J126 and Fresh Air Blower V2

- Test step 3.1 Checking power supply to Fresh Air Blower V2

- Switch off ignition.
- Remove glove compartment. -->
    - **68 - INTERIOR EQUIPMENT**
    - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

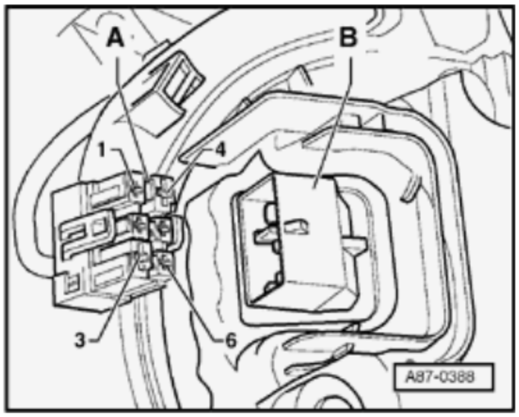

Fig. 49: Identifying Fresh Air Blower Control Module J126 Connector & Voltage Between Contact And Contact At Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** - from Fresh Air Blower Control Module J126 - **B** -.
- Measure voltage between contact - **4** - and contact - **3** - at connector - **A** -.

Specified value: approx. Battery voltage

NOTE:

- **If the voltage is below Battery voltage, use wiring diagram to repair voltage supply/Ground (GND) connection.**

- **On vehicles equipped with "sunroof with solar cells" , there is voltage generated by the sunroof solar cells at terminal - 6 - of connector - A - when sunroof is closed.**
- **The Fresh Air Blower Control Module J126 is constantly monitored by the operating and display module, Climatronic Control Module J255. Any malfunctions occurring are stored in the DTC memory. The current status of the Fresh Air Blower V2 is displayed in the measuring value block (display group "018") --> Read Measuring Value Block (function 08).**

Wiring connection to Fresh Air Blower Control Module J126

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (20kohms/200 kohms) • **Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12 connected**					
Test step	**Test Box V.A.G 1598A socket**	**Test of**	• **Test requirements** ○ **Additional operations**	**Specified value**	**Corrective actions for deviations from specification**
3.2	5 + Connector to Fresh Air Blower Control Module J126 contact "2"	Open circuit in wiring between operating and display module, Climatronic Control Module J255 and Fresh Air Blower Control Module J126		• Less than 5 ohms	○ Locate and eliminate open circuit in wiring between Fresh Air Blower Control Module J126 and operating and display module, Climatronic Control Module J255
3.3	6 + Connector to Fresh Air Blower Control Module J126 contact "1"				

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, voltage measurement (20 V =)

- **Adapter - 16 Terminals V.A.G 1598/12 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
3.4	5 + 13	Open circuit in wiring between operating and display module, Climatronic Control Module J255 and Fresh Air Blower Control Module J126	• Ignition switched on • Connector of Fresh Air Blower Control Module J126 disconnected	• Less than 1 V	○ Use wiring diagram to locate and eliminate short to positive
3.5	6 + 13				
3.6	5 + 12			• Less than 1 V	○ Use wiring diagram to locate and eliminate short to Ground (GND)
3.7	6 + 12				

Test step "4"

Air conditioner positioning motors with potentiometers

NOTE:

- **The resistance of the potentiometers in the control motors (specification: 3.6 to 5.7 kohms between contacts "1" and "3") can only be measured directly at the control motor (parallel connection).**
- **The resistance of the potentiometers in the control motors (between contacts "1" and "2 " as well as "3" and "2") is governed by the position of the control motor and is only to be measured with the control motor installed. The upper specification is not attained in test steps "4.1" and "4.2". (To achieve the upper specification, all connectors would have to be disconnected from the other control motors during measurement because of the parallel connection).**

- **If the operating and display module, Climatronic Control Module J255 detects the fault "Potentiometer short to Ground (GND)" or "Open circuit/short to positive" , check all potentiometers in the control motors as well as the corresponding wiring.**
- **If several control motors are simultaneously displayed as being defective in the DTC memory and if no malfunction is found in test step "4" , check the potentiometers in all control motors and the wiring between the individual control motors for short circuit (e.g. between Defroster Flap Motor V107 and Central Air Flap Motor V70 ; with connectors disconnected from all control motors as well as from operating and display module, Climatronic Control Module J255 , the measuring instrument reading between sockets "1" , "2" and "3" in the corresponding connector must be "infinity ohms").**

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (20 kohms)

- **Adapter V.A.G 1598/11 connected**

Test step	**Test Box V.A.G 1598A socket**	**Test of**	• **Test requirements** ○ **Additional operations**	**Specified value**	**Corrective actions for deviations from specification**
4.1	21 + 22	Left Temperature Flap Potentiometer/Actuator G220 (in Left Temperature Flap Motor V158)	• Ignition switched off	• Greater than 0.1 kohms and less than 5.7 kohms	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or contact resistance
	21 + 23	Right Temperature Flap Potentiometer/Actuator G221 (in Right Temperature Flap Motor V159)		○ Depending on position of control motor	○ Replace control motor
	21 + 24	Defroster Flap Motor Position Sensor G135 (in Defroster Flap Motor V107)			

	21 + 25	Central Flap Motor Position Sensor G112 (in Central Air Flap Motor V70)			
	21 + 26	Recirculation Flap Motor Position Sensor G143 (in Recirculation Flap Motor V113)			
	21 + 27	Back Pressure Flap Motor Position Sensor G113 (in Air Flow Flap Motor V71)			

NOTE:

- **The Air Flow Flap Motor V71 is used to activate the air flow/fresh-air flap.**

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (20 kohms)

- **Adapter V.A.G 1598/11 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
4.2	34 + 22	Left Temperature Flap Potentiometer/Actuator G220 (in Left Temperature Flap Motor V158)	• Ignition switched off	• Greater than 0.1 kohms and less than 5.7 kohms	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or contact resistance
	34 + 23	Right Temperature Flap Potentiometer/Actuator G221 (in Right Temperature Flap Motor V159)		○ Depending on position of control motor	○ Replace control motor
	34 + 24	Defroster Flap Motor Position Sensor G135 (in Defroster Flap Motor			

		V107)			
	34 + 25	Central Flap Motor Position Sensor G112 (in Central Air Flap Motor V70)			
	34 + 26	Recirculation Flap Motor Position Sensor G143 (in Recirculation Flap Motor V113)			
	34 + 27	Back Pressure Flap Motor Position Sensor G113 (in Air Flow Flap Motor V71)			

NOTE:

- **The Air Flow Flap Motor V71 is used to activate the air flow/fresh-air flap.**

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (20 kohms)

- **Adapter V.A.G 1598/11 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
4.3	Ground (GND) * See note + 22	Left Temperature Flap Potentiometer/Actuator G220 (in Left Temperature Flap Motor V158)	• Ignition switched off	• infinity ohms	○ Use wiring diagram to locate and eliminate short to Ground (GND)
	Ground (GND) * See note + 23	Right Temperature Flap Potentiometer/Actuator G221 (in Right Temperature Flap Motor V159)			○ Replace control motor
	Ground (GND) * See note + 24	Defroster Flap Motor Position Sensor G135 (in Defroster Flap Motor V107)			
	Ground	Central Flap Motor			

	(GND) * See note + 25	Position Sensor G112 (in Central Air Flap Motor V70)			
	Ground (GND) * See note + 26	Recirculation Flap Motor Position Sensor G143 (in Recirculation Flap Motor V113)			
	Ground (GND) * See note + 27	Back Pressure Flap Motor Position Sensor G113 (in Air Flow Flap Motor V71)			

* Ground (GND) is applied to connector "D" , contact "13".

NOTE:

- **The Air Flow Flap Motor V71 is used to activate the air flow/fresh-air flap.**

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (200 ohms)

- **Adapter V.A.G 1598/11 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
4.4	41 + 42	Left Temperature Flap Motor V158	• Ignition switched off	• 20 to 100 ohms	○ Use wiring diagram to locate and eliminate short circuit, open circuit in wiring or contact resistance
4.5	51 + 52	Right Temperature Flap Motor V159			○ Replace control motor
4.6	47 + 48	Recirculation Flap Motor V113			
4.7	43 + 44	Defroster Flap			

		Motor V107			
4.8	45 + 46	Central Air Flap Motor V70			
4.9	49 + 50	Air Flow Flap Motor V71			

NOTE:

- **The Air Flow Flap Motor V71 is used to activate the air flow/fresh-air flap.**

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (200 ohms)

- **Adapter V.A.G 1598/11 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
4.10		Short to Ground (GND) in wiring to control motors			
	Ground (GND) * See note + 41	Left Temperature Flap Motor V158	• Ignition switched off	• infinity ohms	○ Use wiring diagram to eliminate short to Ground (GND)
	Ground (GND) * See note + 43	Defroster Flap Motor V107			
	Ground (GND) * See note + 45	Central Air Flap Motor V70			
	Ground (GND) * See note + 47	Recirculation Flap Motor V113			
	Ground (GND) * See note + 49	Air Flow Flap Motor V71			

	Ground (GND) * See note + 51	Right Temperature Flap Motor V159			

* Ground (GND) is applied to connector "D" , contact "13".

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, voltage measurement (20 V =)

- **Adapter V.A.G 1598/11 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
4.11		Short to positive in wiring to control motors			
	Ground (GND) * See note + 41	Left Temperature Flap Motor V158	• Ignition switched on	• Less than 1 V	○ Use wiring diagram to eliminate short to positive
	Ground (GND) * See note + 43	Defroster Flap Motor V107			
	Ground (GND) * See note + 45	Central Air Flap Motor V70			
	Ground (GND) * See note + 47	Recirculation Flap Motor V113			
	Ground (GND) * See note + 49	Air Flow Flap Motor V71			
	Ground (GND) * See note	Right Temperature Flap Motor V159			

	+ 51				

* Ground (GND) is applied to connector "D" , contact "13".

Test steps "5" to "9"

Test step "5"

Pressure signal from High Pressure Sensor G65

Diagnostic Operation System VAS 5051A , measurement mode: DSO (Digital Storage Oscilloscope) Setting 5V/div DC, 5 ms/div (5 V DC and 5 milliseconds per unit) • **Adapter - 16 Terminals V.A.G 1598/12 connected**					
Test step	**Test Box V.A.G 1598A socket**	**Test of**	• **Test requirements** ○ **Additional operations**	**Specified value**	**Corrective actions for deviations from specification**
5.1	7 + 13	Pressure-sensitive square-wave signal from High Pressure Sensor G65	• Ignition switched on • Engine not running • Ambient temperature greater than 20 °C and less than 35 °C	○ Square-wave signal (as a function of pressure in refrigerant circuit) • Duty cycle greater than 16.5 % and less than 50%	• No signal detection ○ Check power supply and Ground (GND) connection to High Pressure Sensor G65. ○ Use wiring diagram to locate and eliminate open circuit in wiring, contact resistance or short circuit between operating and display module, Climatronic

					Control Module J255 and High Pressure Sensor G65 ○ Replace High Pressure Sensor G65

Diagnostic Operation System VAS 5051A , measurement mode: DSO (Digital Storage Oscilloscope) Setting 5V/div DC, 5 ms/div (5 V DC and 5 milliseconds per unit)

- **Adapter - 16 Terminals V.A.G 1598/12 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
5.1 (continued)	7 + 13	Pressure-sensitive square-wave signal from High Pressure Sensor G65	• Ignition switched on • Engine not running • Ambient temperature greater than 20 °C and less than 35 °C		• Duty cycle less than 5% or greater than 95% ○ Check power supply and Ground (GND) connection to High Pressure Sensor G65. ○ High Pressure Sensor G65 defective, replace • Duty cycle greater than 5% and less than 16.5 % ○ Insufficient refrigerant in circuit --> **87 - AIR CONDITIONING**

Diagnostic Operation System VAS 5051A , measurement mode: DSO (Digital Storage Oscilloscope) Setting 5V/div DC, 5 ms/div (5 V DC and 5 milliseconds per unit)

- Adapter - 16 Terminals V.A.G 1598/12 connected

Test step	Test Box V.A.G 1598A socket	Test of	• **Test requirements** ○ Additional operations	Specified value	Corrective actions for deviations from specification
5.1 (continued)	7 + 13	Pressure-sensitive square-wave signal from High Pressure Sensor G65	• Ignition switched on • Engine not running • Ambient temperature greater than 20 °C and less than 35 °C		• Duty cycle greater than 50% or less than 16.5% ○ High Pressure Sensor G65 defective, replace ○ Malfunction in refrigerant circuit - -> **87 - AIR CONDITIONING**

NOTE:

- **If the refrigerant circuit is filled with the correct amount of refrigerant, the pressure and thus the duty cycle change with ambient temperature.**
- **The duty cycle and the pressure calculated by the operating and display module, Climatronic Control Module J255 are displayed in the measuring value block (display group "001") --> Read Measuring Value Block (function 08).**
- **The signal transmitted at a refrigerant circuit pressure of approx. 5 to 6 bar absolute corresponds to a duty cycle of approx. 22%, which is achieved with the compressor not running, at an ambient temperature of 20 °C and with the refrigerant circuit properly charged.**
- **The signal transmitted at a refrigerant circuit pressure of approx. 16 bar absolute corresponds to a duty cycle of approx. 50 %. With the compressor not in operation, this is only achieved under extreme conditions (e.g. very high ambient temperatures and a hot engine).**

Checking pressure signal from High Pressure Sensor G65

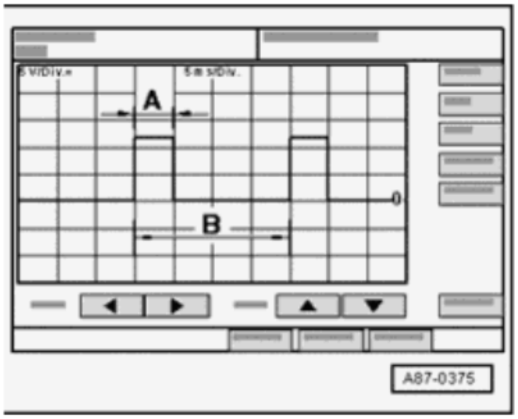

Fig. 50: Identifying Oscilloscope Screen Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

This display appears on the oscilloscope screen if the following conditions are fulfilled.

- Ignition switched on (positive and Ground (GND) applied to High Pressure Sensor G65)
- Oscilloscope settings: 5 V/div. DC (5 V per unit DC voltage) 5 ms/div. (5 milliseconds per unit)
- Measuring lead (signal wire) connected to socket "7" of Test Box V.A.G 1598A (with Adapter - 16 Terminals V.A.G 1598/12)
- Measuring wire (screen) connected to socket "14" (Ground (GND)) of Test Box V.A.G 1598A (with Adapter - 16 Terminals V.A.G 1598/12)

NOTE:

- **The illustration shows the signal transmitted at a refrigerant circuit pressure of approx. 7 bar absolute, corresponding to a duty cycle of approx. 25% (level occurring with compressor not running, ambient temperature of 30 °C and refrigerant circuit charged).**

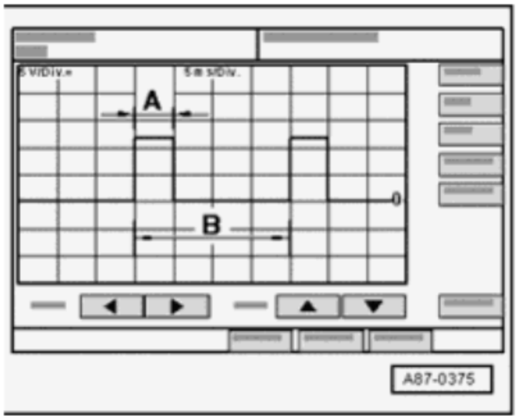

Fig. 51: Identifying Oscilloscope Screen Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **The pulse width - A - is governed by the pressure in the refrigerant circuit (area - A - becomes broader as pressure increases).**

- **The signal distance - B - is always 20 milliseconds (corresponding to a frequency of 50 Hertz).**
- **The duty cycle is derived from the ratio of pulse width - A - to signal distance - B -.**

Connector assignment at High Pressure Sensor G65

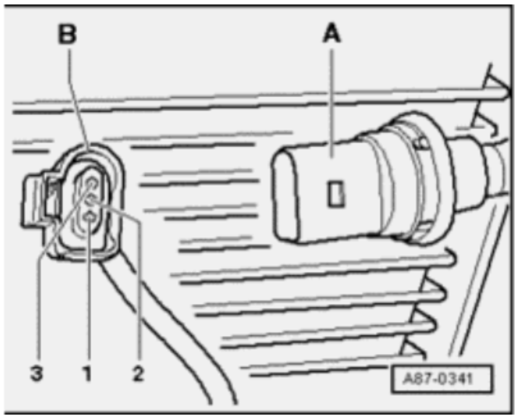

Fig. 52: Connector Assignment At High Pressure Sensor G65
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Contact - **1** - Ground (GND)

Contact - **2** - Signal output (square-wave signal to operating and display module, Climatronic Control Module J255)

Contact - **3** - B+ (terminal "75")

NOTE:

- **The compressor does not switch on if the connector - B - is disconnected.**
- **The High Pressure Sensor - A - is an electronic control unit which generates a square-wave signal with a ratio which varies with the pressure in the refrigerant circuit.**

Pressure signal from High Pressure Sensor G65

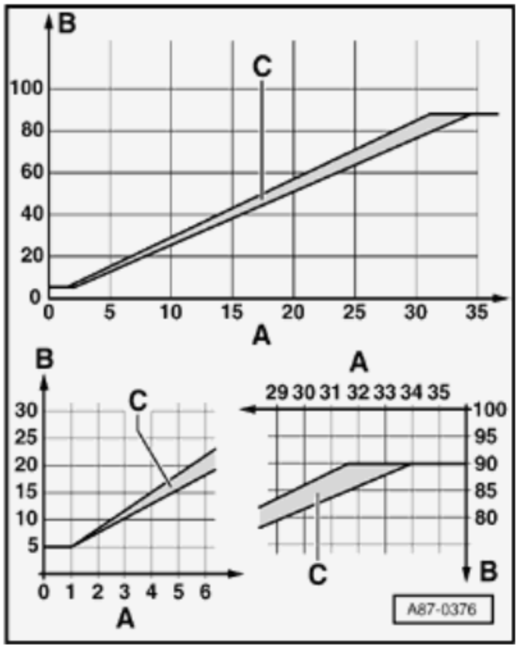

Fig. 53: Pressure Signal From High Pressure Sensor G65
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **A** - Pressure on high-pressure end of refrigerant circuit in bar (absolute)

- **B** - Ratio of square-wave signal

- **C** - Characteristic curve

NOTE:

- **The operating and display module, Climatronic Control Module J255 switches on the compressor (by way of activation of the A/C Compressor Regulator Valve N280) in the case of a ratio of greater than 12 % (corresponding to approx. 1.8 bar absolute pressure) and less than 87.5% (corresponding to approx. 32 bar absolute pressure) if there is no compressor shutoff condition.**
- **If the signal ratio is less than 12 % or greater than 87.5%, the compressor does not switch on (the A/C Compressor Regulator Valve N280 is not activated).**
- **The signal ratio and the pressure calculated by the operating and display module, Climatronic Control Module J255 are displayed in the measuring value block --> Read Measuring Value Block (function 08) (display group "001").**

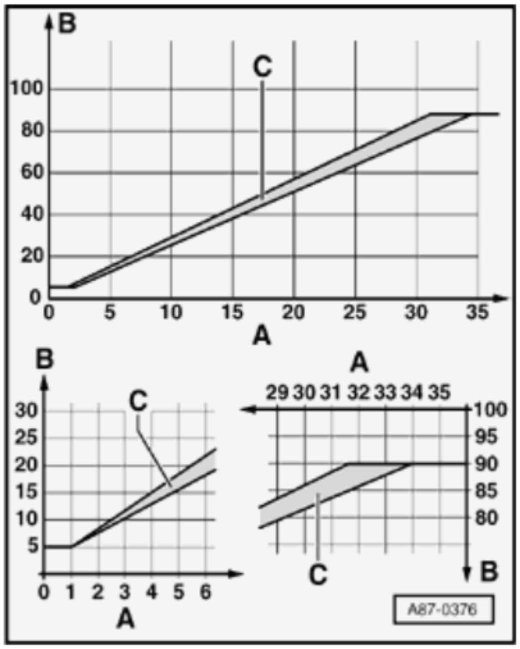

Fig. 54: Pressure Signal From High Pressure Sensor G65
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **At absolute pressure, 0 bar corresponds to an absolute vacuum. Normal ambient pressure thus corresponds to roughly 1 bar absolute. On the scales of most pressure gauges, 0 bar corresponds to an absolute pressure of one bar (can be seen from -1 mark below 0).**
- **The operating and display module, Climatronic Control Module J255 transmits the request for activation of the Coolant Fan V7 via the CAN-Bus comfort system to the engine control module, which then causes the Coolant Fan Control (FC)Control Module J293 to switch on the Coolant Fan V7 :**
- **- As soon as the compressor is switched on irrespective of the pressure in the refrigerant circuit.**
- **The operating and display module, Climatronic Control Module J255 transmits the request for increased Coolant Fan V7 speed via the CAN-Bus comfort system to the engine control module:**
- **100% is currently only requested at a pressure of approx. 26 bar in the refrigerant circuit.**
- **The signal generated by the High Pressure Sensor G65 is also used for engine control. The operating and display module, Climatronic Control Module J255 transmits the information via the CAN-Bus comfort system to the engine control module (torque required for driving compressor is governed by pressure in refrigerant circuit). Depending on the version of the engine control module, the signal is displayed as a ratio in the measuring value block "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052**

Test step "6"

Activation for A/C Compressor Regulator Valve N280

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (200 ohms)

- **Adapter - 16 Terminals V.A.G 1598/12 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
6.1	3 + 13	Wiring to A/C Compressor Regulator Valve N280	• Ignition switched on	• Greater than 5 ohms and less than 20 ohms	○ Use wiring diagram to locate and eliminate open circuit or contact resistance in wiring between A/C Compressor Regulator Valve N280 and operating and display module, Climatronic Control Module J255 or in Ground (GND) connection to A/C Compressor Regulator Valve N280. ○ Use wiring diagram to locate and eliminate short to Ground (GND) in connection between A/C Compressor Regulator Valve N280 and operating and display module, Climatronic Control Module J255. ○ Open circuit in

					A/C Compressor Regulator Valve N280 , replace compressor --> **87 - AIR CONDITIONING**

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, voltage measurement (20 V =)

- Adapter - 16 Terminals V.A.G 1598/12 connected

Test step	Test Box V.A.G 1598A socket	Test of	• **Test requirements** ○ Additional operations	Specified value	Corrective actions for deviations from specification
6.2	3 + 13	Wiring to A/C Compressor Regulator Valve N280	• Ignition switched on	• Less than 1 V	○ Use wiring diagram to locate and eliminate short to positive in connection between A/C Compressor Regulator Valve N280 and operating and display module, Climatronic Control Module J255.

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, current measurement (10 A DC)

- **Adapter - 16 Terminals V.A.G 1598/12 connected**

Test step	**Test Box V.A.G 1598A socket**	**Test of**	• **Test requirements** ○ **Additional operations**	**Specified value**	**Corrective actions for deviations from specification**

6.3	3 + 12	Current measurement via A/C Compressor Regulator Valve N280	- Ignition switched on	- Greater than 0.5 A and less than 1.5 A	○ Use wiring diagram to locate and eliminate short to Ground (GND) or open circuit in wiring between A/C Compressor Regulator Valve N280 and operating and display module, Climatronic Control Module J255 ○ A/C Compressor Regulator Valve N280 defective, replace compressor --> **87 - AIR CONDITIONING**

NOTE:

- **During operation, the output of the compressor is influenced via the A/C Compressor Regulator Valve N280.**
- **The operating and display module, Climatronic Control Module J255 regulates the current flowing via the A/C Compressor Regulator Valve N280 and thus the compressor output (reading measuring value block, display group "001") --> Read Measuring Value Block (function 08).**

Engagement signal for A/C Compressor Regulator Valve N280 , checking

- Switch off ignition.
- Connect operating and display module, Climatronic Control Module J255 to vehicle wiring harness.
- Disconnect connector at air conditioner compressor (to A/C Compressor Regulator Valve N280).

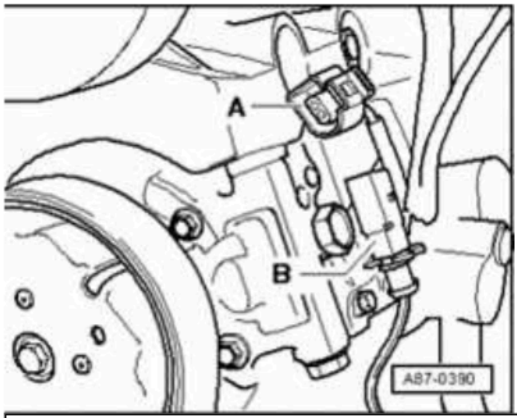

Fig. 55: Using Adapter From Connector Test Set V.A.G 1594C To Reestablish Connection Between Connector & Connector At Compressor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use adapter from Connector Test Set V.A.G 1594C to reestablish connection between connector - **A** - and connector - **B** - at compressor (to A/C Compressor Regulator Valve N280).

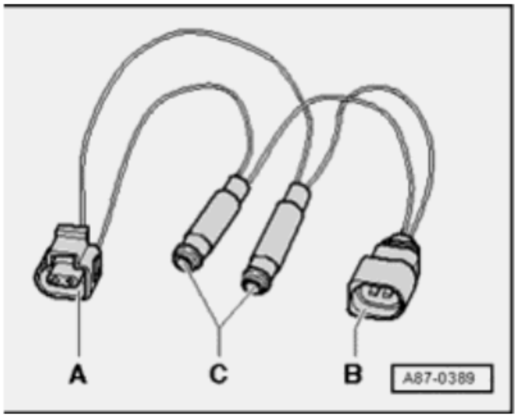

Fig. 56: Identifying Connectors & Sockets For Banana Plugs
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Use can also be made for this test of an improvised adapter. This requires, for example, one connector - A - and - B - each (with part number 1J0 973 702 and 1J0 973 802 and the corresponding plug contacts), two commercially available sockets for banana plugs - C - and two wires with a cross section of 0.5 mm ^{2} .**

- Connect Dso Measuring Leads 1 2 VAS 5051/8 to adapter leads.
- Measuring lead (signal wire) to contact 2
- Measuring wire (screen, Ground (GND)) to contact 1
- On Diagnostic Operation System VAS 5051A , set measurement mode: "DSO" (Digital Storage Oscilloscope).
- Settings 5V/div DC, 0.5 ms/div (5 V DC and 0.5 milliseconds per unit)
- Start engine.
- On operating and display module, Climatronic Control Module J255 , select "Lo" temperature setting for drivers and front passengers side.
- On operating and display module, Climatronic Control Module J255 , press buttons "Auto" and "ECON" to activate and deactivate A/C Compressor Regulator Valve N280.

Display on oscilloscope screen will be as follows depending on setting on operating and display module, Climatronic Control Module J255 :

- In "OFF" or "ECON" mode: no square-wave signal (A/C Compressor Regulator Valve N280 is not activated)

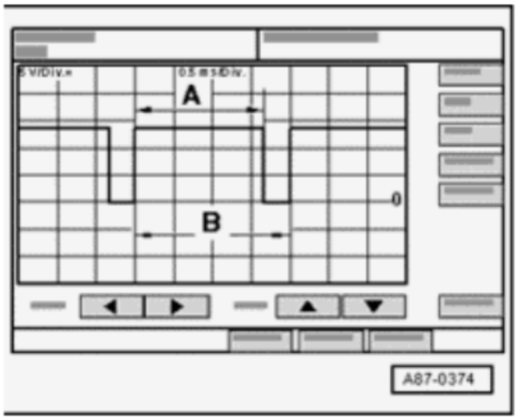

Fig. 57: Oscilloscope Screen Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- In "Auto" mode and "Lo" temperature setting: Square-wave signal with pulse width - **A** - between 75% and 100% (A/C Compressor Regulator Valve N280 is activated)

NOTE:

- **The illustration shows a signal with a ratio of approx. 80%.**
- **The pulse width - A - is governed by the required cooling output, electrical system voltage etc. (over width of area - A - , current is controlled via A/C Compressor Regulator Valve N280 by operating and display module, Climatronic Control Module J255).**
- **The signal distance - B - is always 2 milliseconds (corresponding to a frequency of 500 Hertz).**
- **The duty cycle is derived from the ratio of pulse width - A - to signal distance - B -.**

- The setting on the operating and display module, Climatronic Control Module J255 and measured ambient influences govern the pulse width of the square-wave signal (signal ratio between 100% and greater than 30%, A/C Compressor Regulator Valve N280 is activated such that the compressor output required to obtain the specified temperatures is achieved).

NOTE:

- **In "Auto" mode with "Lo" temperature setting, the A/C Compressor Regulator Valve N280 is activated such that the max. perm. current of approx. 0.6 to 0.8 A flows via the A/C Compressor Regulator Valve N280 (maximum compressor output).**
- **In control mode, the activation time is governed by the required cooling output and vehicle electrical system voltage, for example. It is however always of sufficient duration to achieve a mean current of 0.3 A.**

Test step "7"

Sunlight Photo Sensor G107

NOTE:

- **There are different versions of the operating and display module, Climatronic Control Module J255 and the Sunlight Photo Sensor G107. Attention must therefore be paid to the exact assignment when replacing an operating and display module .**
- **As of VIN 400000 in Model Year 2005 (for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), vehicles are to be installed with a modified Sunlight Photo Sensor G107 and a modified operating and display module, Climatronic Control Module J255. Operating and display units, Climatronic Control Module J255 with part No. index up to "AH" are only to be installed with the Sunlight Photo Sensor G107 with part No. 8E0 907 539. Operating and display units, Climatronic Control Module J255 with part No. index "AJ" onwards are only to be installed with the Sunlight Photo Sensor G107 with part No. 8P0 907 539 .**
- **In the event of incorrect assignment between the Sunlight Photo Sensor G107 and the operating and display module, Climatronic Control Module J255 , the operating and display module, Climatronic Control Module J255 cannot evaluate the signal from the Sunlight Photo Sensor G107 and there will be problems with air conditioner control.**

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, voltage measurement (20 V =)

- **Adapter V.A.G 1598/11 connected**

Test step	Test Box V.A.G 1598A socket	Test of	• Test requirements ○ Additional operations	Specified value	Corrective actions for deviations from specification
7.1	4 + Ground (GND) * See note	Wiring to Sunlight Photo Sensor G107	• Ignition switched on	• Less than 2 V	○ Use wiring diagram to locate and eliminate short to positive
7.2	3 + Ground (GND) * See note	Wiring to Sunlight Photo Sensor G107	• Ignition switched on	• Less than 2 V	○ Use wiring diagram to locate and eliminate

					short to positive

* Ground (GND) is applied to connector "D" , contact "13".

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (20 kohms)

- **Adapter V.A.G 1598/11 connected**

Test step	**Test Box V.A.G 1598A socket**	**Test of**	• **Test requirements** ○ **Additional operations**	**Specified value**	**Corrective actions for deviations from specification**
7.3	3 + Ground (GND) * See note	Wiring to Sunlight Photo Sensor G107	• Ignition switched on	• infinity ohms	○ Use wiring diagram to locate and eliminate short to Ground (GND)
7.4	4 + Ground (GND) * See note	Wiring to Sunlight Photo Sensor G107	• Ignition switched on	• infinity ohms	○ Use wiring diagram to locate and eliminate short to Ground (GND)

* Ground (GND) is applied to connector "D" , contact "13".

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, voltage measurement (20 V =)

- **Adapter - 16 Terminals V.A.G 1598/12 connected**

Test step	**Test Box V.A.G 1598A socket**	**Test of**	• **Test requirements** ○ **Additional operations**	**Specified value**	**Corrective actions for deviations from specification**
7.5	1 + 13	Wiring to	• Ignition switched on	• Less than 2	○ Use

		Sunlight Photo Sensor G107		V	wiring diagram to locate and eliminate short to positive
7.6	16 + 13	Wiring to Sunlight Photo Sensor G107	- Ignition switched on	- Less than 2 V	○ Use wiring diagram to locate and eliminate short to positive

Diagnostic Operation System VAS 5051A , measurement mode: Multi-meter, resistance measurement (20 kohms)

- **Adapter - 16 Terminals V.A.G 1598/12 connected**

Test step	**Test Box V.A.G 1598A socket**	**Test of**	- **Test requirements** ○ **Additional operations**	**Specified value**	**Corrective actions for deviations from specification**
7.7	1 + 13	Wiring to Sunlight Photo Sensor G107	- Ignition switched on	- infinity ohms	○ Use wiring diagram to locate and eliminate short to Ground (GND)
7.8	16 + 13	Wiring to Sunlight Photo Sensor G107	- Ignition switched on	- infinity ohms	○ Use wiring diagram to locate and eliminate short to Ground (GND)

COMPONENTS ACTIVATED BY OPERATING AND DISPLAY MODULE, CLIMATRONIC

CONTROL MODULE J255 , ELECTRICAL TESTING

Heated Rear Window Z1 , testing

NOTE:

- **If a condition exists which prevents activation of the Heated Rear Window (short circuit in connection to rear window or to Rear Window Defogger Relay J9 , open circuit in power supply to operating and display module, Climatronic Control Module J255 or open convertible top with Cabrio), the indicator lamp in the button lights on pressing the button in the operating and display module, Climatronic Control Module J255 and goes out again on releasing the button, however the heating is not activated.**
- **If the voltage measured by the operating and display module, Climatronic Control Module J255 at terminal "30" drops below 12.5 V, the power of the Heated Rear Window is reduced, thus relieving the load on the Generator (GEN) (the electronic system of the operating and display module, Climatronic Control Module J255 reduces the activation duty cycle from 100% to 90 to 10%).**
- **On vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 is activated directly by the operating and display module, Climatronic Control Module J255 (the relay for switching the current is installed in the operating and display module, Climatronic Control Module J255).**
- **On vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), the Heated Rear Window Z1 will no longer be activated directly by the operating and display module, Climatronic Control Module J255 (operating and display modules, Climatronic Control Module J255 with part No. index "AJ" onwards are no longer installed with a relay). On these vehicles, the Heated Rear Window Z1 is activated via the Rear Window Defogger Relay J9.**
- **At ambient temperatures below 0 °C, the Heated Rear Window remains switched on until the ignition is switched off (manual deactivation is possible at any time). If the temperature during a driving cycle rises above 0 °C, the Heated Rear Window Z1 is deactivated on completion of the operating period stored in the operating and display module, Climatronic Control Module J255 (approx. 12 minutes).**
- **At ambient temperatures greater than 0 °C, activation of the Heated Rear Window Z1 is terminated automatically on completion of the operating period (approx. 12 minutes) stored in the operating and display module, Climatronic Control Module J255 via the operating and display module, Climatronic Control Module J255.**

Special tools and equipment

- Diagnostic Operation System VAS 5051A (with Inductive Pickup (50 Amp) VAS 5051/9)
- Connector Test Set V.A.G 1594C

NOTE:
- **All fuses OK**

- Switch off ignition.
- Remove operating and display module, Climatronic Control Module J255.

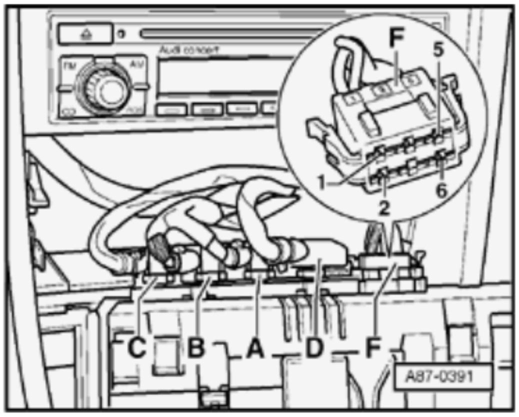

Fig. 58: Disconnecting Connectors From Operating And Display Module, Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connectors - **D** - and - **F** - from operating and display module, Climatronic Control Module J255.
- Connect test box Adapter - 16 Terminals V.A.G 1598/12 to disconnected connector - **D** -.
- Connect Test Box V.A.G 1598A to Adapter - 16 Terminals V.A.G 1598/12

Test for vehicles up to VIN "399999" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)

- Measure voltage between contact "5" at connector - **F** - and socket "13" (Ground (GND) connection) of test box.

- Specified value: approx. Battery voltage

- Measure resistance between contact 6 at connector - **F** - and socket "13" (Ground (GND) connection) of test box.

- Specified value: Resistance approx. 0.5 to 1.0 ohms (ohms)

NOTE:
- **As resistances of less than 10 ohms cannot be measured with sufficient accuracy using workshop equipment, it is not possible to establish a short circuit in the wiring or in the Heated Rear Window Z1.**

- **If the resistance value is too high, check wiring to Heated Rear Window Z1 for open circuit and eliminate open circuit.**

- Plug connectors - **D** - and - **F** - to operating and display module, Climatronic Control Module J255 (all connectors are now plugged in at operating and display module, Climatronic Control Module J255).
- Guide wire to connector - **F** - contact "6" through Inductive Pickup (50 Amp) VAS 5051/9.
- On Diagnostic Operation System VAS 5051A , set "Multi-meter measurement: inductive pickup (50 amp)" mode.

NOTE:

- **All connectors must be plugged in at the operating and display module, Climatronic Control Module J255.**

- Start engine.
- Switch on Heated Rear Window at the operating and display module, Climatronic Control Module J255 (indicator lamp in button lights).

- Specified value: Display switches from approx. 0 A to less than 25 A

- Wait approx. 12 minutes.

- Specified value: Display switches from less than 25 A to approx. 0 A (indicator lamp in button goes out)

NOTE:

- **Interference on the current probe measuring leads 1 2 may cause a slight current to be displayed with the Heated Rear Window switched off.**
- **At ambient temperatures below 0 °C, the Heated Rear Window Z1 remains switched on until the ignition is switched off (manual deactivation is possible at any time). If the temperature during a driving cycle rises above 0 °C, the Heated Rear Window is deactivated on completion of the operating period stored in the operating and display module, Climatronic Control Module J255 (approx. 12 minutes).**
- **At ambient temperatures greater than 0 °C, the Heated Rear Window is switched off automatically by the operating and display module, Climatronic Control Module J255 on completion of the operating period stored in the operating and display module, Climatronic Control Module J255 (approx. 12 minutes).**

Test for vehicles as of VIN "400000" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)

- Measure voltage between socket "12" (terminal "30") and socket "13" (Ground (GND) connection) of test box.

- Specified value: approx. Battery voltage

- ○ Measure resistance between contact "6" at connector - **F** - and socket "13" (Ground (GND) connection) of test box.

- Specified value: Resistance approx. 10 to 100 ohms (ohms)

NOTE:

- **As resistances of less than 10 ohms cannot be measured with sufficient accuracy using workshop equipment, it is not possible to establish a short circuit in the wiring or in the Heated Rear Window Z1.**
- **If the resistance value is too high, check wiring to Heated Rear Window Z1 for open circuit and eliminate open circuit.**

- ○ Plug connectors - **D** - and - **F** - to operating and display module, Climatronic Control Module J255 (all connectors are now plugged in at operating and display module, Climatronic Control Module J255).
- ○ On Diagnostic Operation System VAS 5051A , set "Multi-meter measurement, voltage measurement (20 V DC)" mode.

NOTE:

- **All connectors must be plugged in at the operating and display module, Climatronic Control Module J255.**
- **Measure voltage between contact "6" at connector - F - and socket "13" (Ground (GND) connection) of test box.**
- **Specified value: Voltage less than 2 V**

- ○ Start engine.
- ○ Switch on Heated Rear Window at the operating and display module, Climatronic Control Module J255 (indicator lamp in button lights).

- Specified value: Voltage switches from approx. 0 V to approx. Battery voltage (and Rear Window Defogger Relay J9 switches on Heated Rear Window Z1)

NOTE:

- **Activation for Heated Rear Window can be checked for example by placing hand on heater coil area of rear window (heater wires must become warm).**

- ○ Wait approx. 12 minutes.

- Specified value: Display switches from approx. Battery voltage to less than approx. 2 V (indicator lamp in button goes out)

NOTE:

- **At ambient temperatures below 0 °C, the Heated Rear Window Z1 remains switched on until the ignition is switched off (manual deactivation is possible at any time). If the temperature during a driving cycle rises above 0 °C, the Heated Rear Window is deactivated on completion of the operating period stored in the operating and display module, Climatronic Control Module J255 (approx. 12 minutes).**

- **At ambient temperatures greater than 0 °C, the Heated Rear Window is switched off automatically by the operating and display module, Climatronic Control Module J255 on completion of the operating period stored in the operating and display module, Climatronic Control Module J255 (approx. 12 minutes).**

Heated seats, testing

NOTE:

- **If the voltage measured by the operating and display module, Climatronic Control Module J255 at terminal "30" drops below 12.3 V, the seat heating power is reduced, thus relieving the load on the Generator (GEN) (the electronic system of the operating and display module, Climatronic Control Module J255 reduces the activation duty cycle from 100% to 90 to 10% event if the specified seat temperature has not yet been reached).**

Checking temperature sensors

Special tools and equipment

- Test Box V.A.G 1598A as well as corresponding Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12
- Diagnostic Operation System VAS 5051A (with Multimeter Leads VAS 5051/7)
- Connector Test Set V.A.G 1594C

- ○ Switch off ignition.
- ○ Remove operating and display module, Climatronic Control Module J255.

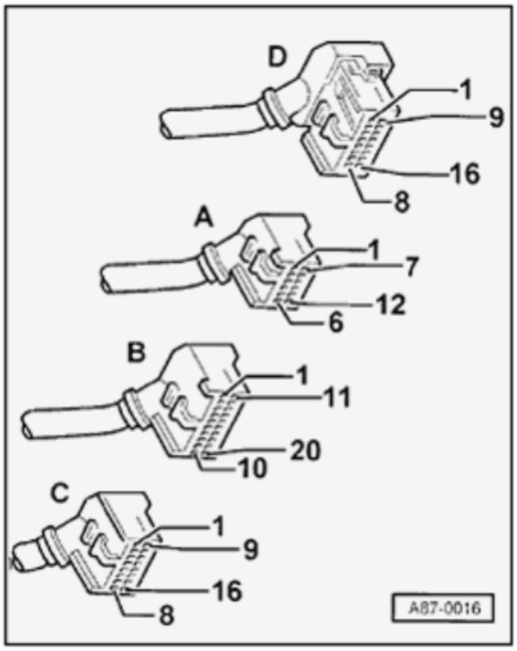

Fig. 59: VAG 1598 Test Box With VAG 1598/11 And VAG 1598/12 Adapter Cables
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Test Box V.A.G 1598A with corresponding Adapter V.A.G 1598/11 to connector - **C** - --> **Wiring and component check using Test Box V.A.G 1598A**.
- Connect Adapter - 16 Terminals V.A.G 1598/12 to connector - **D** - (use second Test Box V.A.G 1598A or connect measuring instrument with suitable test lead from Connector Test Set V.A.G 1594C directly to Adapter - 16 Terminals V.A.G 1598/12) --> **Wiring and component check using Test Box V.A.G 1598A**.

NOTE:

- **The terminal assignment of the connector - C - for the Adapter V.A.G 1598/11 and the connector - D - for the Adapter - 16 Terminals V.A.G 1598/12 is identical to the assignment of the sockets at the Test Box V.A.G 1598A.**

- Measure resistance between contact "5" in connector - **C** - (to Drivers Heated Seat Temperature Sensor G59) and contact "16" in connector - **D** - (Ground (GND) connection) at test boxes.

- Specified value: Resistance greater than 1.5 kohms (kilo-ohms) and less than 25 kohms (depending on temperature of temperature sensor; at a seat temperature of 20 °C, measured value is approx. 10 kohms)

- Measure resistance between contact "6" in connector - **C** - (to Front Passengers Heated Seat Temperature Sensor G60) and contact "16" in connector - **D** - (Ground (GND) connection) at test boxes.

- Specified value: Resistance greater than 1.5 kohms (kilo-ohms) and less than 25 kohms (depending on temperature of temperature sensor; at a seat temperature of 20 °C, measured value is approx. 10 kohms)

NOTE:

- **The resistance of the temperature sensors in the seat heater elements changes with temperature (the values given in the table below are approximate).**

Temperature at seat temperature sensor in °C	Resistance of temperature sensor in kohms
20	10
30	6.0
40	4.2
50	2.8
60	1.7

- If the resistance value is too high, check wiring to seat heater elements for open circuit or contact resistance and eliminate this. If the open circuit is in the seat, repair the seat and -->
  - **72 - SEAT - FRAMES**
  - **72 - SEAT - FRAMES** for BODY INTERIOR - CABRIOLET

Checking heating elements

Special tools and equipment

- Diagnostic Operation System VAS 5051A (with Inductive Pickup (50 Amp) VAS 5051/9)
- Connector Test Set V.A.G 1594C
- Test Box V.A.G 1598A and Adapter - 16 Terminals V.A.G 1598/12

NOTE:

- **All fuses OK**

- Switch off ignition.
- Remove operating and display module, Climatronic Control Module J255.

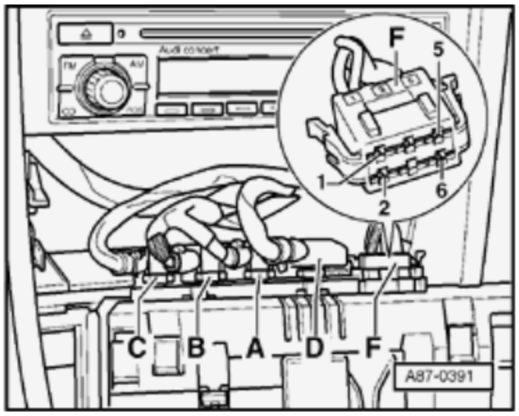

Fig. 60: Disconnecting Connectors From Operating And Display Module, Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connectors - **D** - and - **F** - from operating and display module, Climatronic Control Module J255.
- Connect test box Adapter - 16 Terminals V.A.G 1598/12 to disconnected connector - **D** -.
- Connect Test Box V.A.G 1598A to Adapter - 16 Terminals V.A.G 1598/12
- Measure voltage between contact "3" at connector - **F** - and socket "13" (Ground (GND) connection) of Test Box V.A.G 1598A.

- Specified value: approx. Battery voltage

- Measure resistance between contact "1" at connector - **F** - (to heater element for Drivers Seat Heating Element Z6) and socket "13" (Ground (GND) connection) of Test Box V.A.G 1598A.

- Specified value: Resistance approx. 1.5 (to 2.5) to 25 ohms (ohms)

- Measure resistance between contact "2" at connector - **F** - (to heater element in front passenger seat) and socket "13" (Ground (GND) connection) of Test Box V.A.G 1598A.

- Specified value: Resistance approx. 1.5 (to 2.5) to 25 ohms (ohms)

NOTE:

- **Contact resistance at the various connectors may result in resistance values of up to approx. 25 ohms being measured. As soon as a voltage of 12 V is applied, this contact resistance decreases and the seat heating function is not impaired.**
- **On right-hand drive vehicles, the driver seat is connected to contact "2" and the front passenger seat to contact "1".**
- **The resistance of the seat heater elements changes with temperature (at a seat temperature of 20 °C, the resistance is approx. 1.9 ohms).**
- **As resistances of less than 10 ohms cannot be measured with sufficient accuracy using workshop equipment, it is not possible to establish a short circuit in the wiring or in the seat heater elements.**
- **If the resistance value is too high, check wiring to seat heater elements for open circuit and eliminate this. If the open circuit is in the seat, repair the seat and -->**
    - **72 - SEAT - FRAMES**
    - **72 - SEAT - FRAMES for BODY INTERIOR - CABRIOLET**

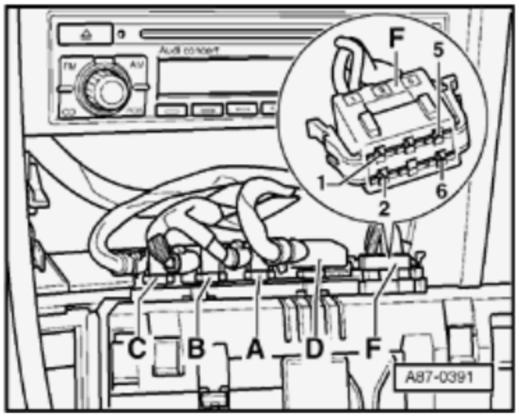

Fig. 61: Disconnecting Connectors From Operating And Display Module, Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Plug connectors - **D** - and - **F** - to operating and display module, Climatronic Control Module J255 (all connectors are now plugged in at operating and display module, Climatronic Control Module J255).
- Guide wire to connector - **F** - contact "1" through Inductive Pickup (50 Amp) VAS 5051/9.
- On Diagnostic Operation System VAS 5051A , set "Multi-meter measurement: inductive pickup (50 amp)" mode.
- Set both thumb wheels for heated seats (at operating and display module, Climatronic Control Module J255) to position "0".

NOTE:

- **All connectors must be plugged in at the operating and display module, Climatronic Control Module J255.**

- ○ Start engine.
- ○ Set thumb wheel for heated driver seat to position "6".

- Specified value: Display switches from approx. 0 A to less than 10 A

- ○ Set thumb wheel for heated driver seat to position "0".

- Specified value: Display switches from less than 10 A to approx. 0 A

- ○ Guide wire to connector - **F** - contact "2" (contact "1" on right-hand drive vehicles) through Inductive Pickup (50 Amp) VAS 5051/9.
- ○ Set thumb wheel for heated front passenger seat to position "6".

- Specified value: Display switches from approx. 0 A to less than 10 A

- ○ Set thumb wheel for heated front passenger seat to position "0".

- Specified value: Display switches from less than 10 A to approx. 0 A

NOTE:

- **Interference on the current probe measuring leads 1 2 may cause a slight current to be displayed with the seat heating switched off.**
- **In the event of an open circuit or a short circuit in the connection to the seat temperature sensor, the output to the heater element is does not switch by the operating and display module, Climatronic Control Module J255.**
- **In the event of a short to Ground (GND) in the seat heater element or in the wiring, the operating and display module, Climatronic Control Module J255 does not switch on the heating (immediate deactivation as soon as current is too high).**
- **The design of the seat heater elements differs. Depending on heater element design there is thus a possibility of the two side bolsters being constantly heated, e.g. in the event of an open circuit in the seat cushion heater element (the temperature sensor is located in the seat cushion).**

Heated Windshield Z2 , checking activation

Special tools and equipment

- Test Box V.A.G 1598A as well as corresponding Adapter V.A.G 1598/11 and Adapter - 16 Terminals V.A.G 1598/12
- Diagnostic Operation System VAS 5051A (with Multimeter Leads VAS 5051/7)
- Connector Test Set V.A.G 1594C

- ○ Switch off ignition.

- Remove operating and display module, Climatronic Control Module J255.

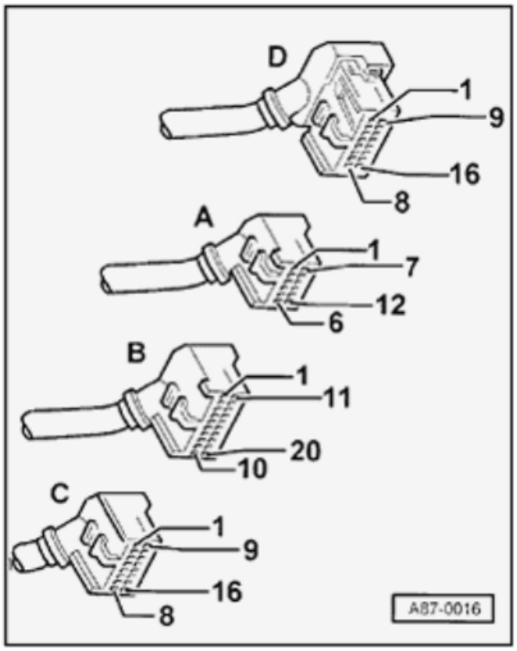

Fig. 62: VAG 1598 Test Box With VAG 1598/11 And VAG 1598/12 Adapter Cables
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Connect Test Box V.A.G 1598A with appropriate Adapter V.A.G 1598/11 between connector - **C** - and operating and display module, Climatronic Control Module J255 --> **Wiring and component check using Test Box V.A.G 1598A**.
- Connect Adapter - 16 Terminals V.A.G 1598/12 between connector - **D** - and operating and display module, Climatronic Control Module J255 (use second Test Box V.A.G 1598A or connect measuring instrument with suitable test lead from Connector Test Set V.A.G 1594C directly to Adapter - 16 Terminals V.A.G 1598/12) --> **Wiring and component check using Test Box V.A.G 1598A**.

NOTE:

- **The terminal assignment of the connector - C - for the Adapter V.A.G 1598/11 and the connector - D - for the Adapter - 16 Terminals V.A.G 1598/12 is identical to the assignment of the sockets at the Test Box V.A.G 1598A.**

- Start engine.

NOTE:

- **All connectors must be plugged in at the operating and display module, Climatronic Control Module J255.**

- Measure voltage between contact "8" in connector - **C** - (from Heated Windshield Control Module J505) and contact "16" in connector - **D** - (Ground (GND) connection).

- Specified value: approx. Battery voltage

- If a voltage of less than 5 V is measured, the Heated Windshield Control Module J505 is currently not ready to activate the Heated Windshield or there is a short to Ground (GND) in the connection to the Heated Windshield Control Module J505 --> **Heated Windshield Z2 , function**.
- If a voltage of between 5 V and 8 V is measured, the operating and display module, Climatronic Control Module J255 is activating the Heated Windshield Control Module J505 and this has activated the Heated Windshield.

WINDSHIELD DEFROSTER

Heated Windshield Z2 , function

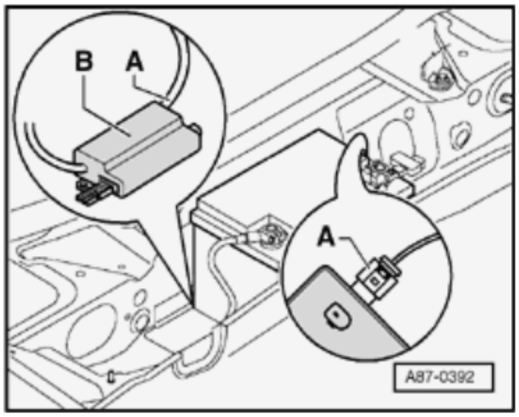

Fig. 63: Identifying Heated Windshield Control Module J505 & Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- The Heated Windshield Control Module J505 - **B** - is activated by the operating and display module, Climatronic Control Module J255 (reading measuring value block, display group "015") --> **Read Measuring Value Block (function 08)** :
  - After starting cold engine if ambient temperature is less than + 5 °C and operating and display module, Climatronic Control Module J255 is set to "Auto" or "Defrost" mode. The temperature setting on the operating and display module, Climatronic Control Module J255 must be such that the air conditioner is in heating mode and the temperature measured by the sensors (Left Vent Temperature Sensor G150 , Right Vent Temperature Sensor G151 , Left Footwell Vent Temperature Sensor G261 and Right Footwell Vent Temperature Sensor G262) must not be in excess of +35 °C. The heating period is governed by ambient temperature (max. 6 minutes at -40 °).
  - On selecting "Defrost" mode on the operating and display module, Climatronic Control Module J255 if the ambient temperature is less than + 5 °C. The heating period is between 2 and 6 minutes depending on ambient temperature. As long as the Heated Windshield is activated, the indicator lamp in the Defrost button flashes (only if, on pressing the Def button, the Heated Windshield had not already been activated by the operating and display module, Climatronic Control Module J255). Activation is only effected if the engine is running and the activation conditions described above are fulfilled.
- The Heated Windshield Control Module J505 - **B** - switches on the Heated Windshield if the following conditions are fulfilled:

  - Operating and display unit, Climatronic Control Module J255 activating Heated Windshield Control Module J505
  - Voltage at Heated Windshield Control Module J505 greater than 12.70 V
  - Heated Windshield Control Module J505 not overheated

- The Heated Windshield Control Module J505 switches approx. Battery voltage to the operating and display module, Climatronic Control Module J255. This informs the operating and display module, Climatronic Control Module J255 that the Heated Windshield Control Module J505 is ready to switch on the Heated Windshield. If this voltage is halved by the operating and display module, Climatronic Control Module J255 (to approx. 5 to 8 V), the Heated Windshield Control Module J505 switches on the heating.
- The resistance of the metal foil in the Heated Windshield Z2 is approx. 1.9 ohms. A voltage greater than the electrical system voltage is required to attain the maximum possible heat output of approx. 1000 W (watts) at the windshield. The Heated Windshield Control Module J505 converts the electrical system voltage into a variable voltage of between 25 and 48 V depending on electrical system voltage. If the voltage at the Heated Windshield Control Module J505 is greater than 13.10 V, the Heated Windshield Z2 is activated with a voltage greater than 41 V (up to max. 48 V). In the event of problems relating to poor Heated Windshield Z2 heat output, check the voltage at the two connection points of the two wires at the windshield. To do so, actuate the Heated Windshield Z2 for example via the "Output Diagnostic Test Mode (DTM) diagnosis" function with the engine running and the Battery fully charged (electrical system voltage must be greater than 13.1 V).
- To prevent electrical system overload, the Heated Windshield Control Module J505 regulates the heat output of the Heated Windshield. With an electrical system voltage of 12.70 V this is approx. 200 W and is infinitely regulated to 1000 W at 13.10 V. The Heated Windshield Control Module J505 permits an increase in power output of max. 200 W per second to guard against voltage dips in the electrical system on switching on the Heated Windshield.
- To prevent activation of the Heated Windshield Z2 in the event of a short circuit or an open circuit in the wiring, the Heated Windshield Control Module J505 checks the resistance of the Heated Windshield Z2. If the measured resistance is less than approx. 1.5 ohms (short circuit) or greater than approx. 3.3 ohms (open circuit or contact resistance), the Heated Windshield Control Module J505 does not switch on the heating or switches it off. Check the wiring between the Heated Windshield Control Module J505 and the Heated Windshield Z2 for contact resistance or short circuit. The resistance measured between the two wires from the Heated Windshield Control Module J505 (to the Heated Windshield Z2) must be less than 2.5 ohms and greater than 1.4 ohms

Windshield defroster, disabling

NOTE:

- **The Heated Windshield Control Module J505 is installed in the plenum chamber beneath the Battery A.**
- **If a crack forms in the windshield due to external influence (e.g. flying stones), the Heated Windshield must be deactivated to prevent crack propagation.**

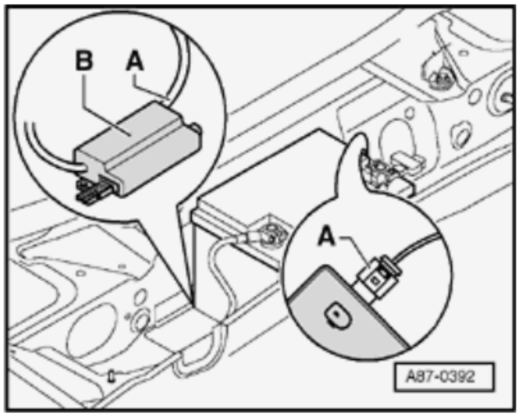

Fig. 64: Identifying Heated Windshield Control Module J505 & Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- So as not to restrict operation of the air conditioner, activation of the Heated Windshield Control Module J505 must be disconnected until the damaged Heated Windshield Z2 has been replaced. To do so, disconnect connector - A - from Heated Windshield Control Module J505 - B -.

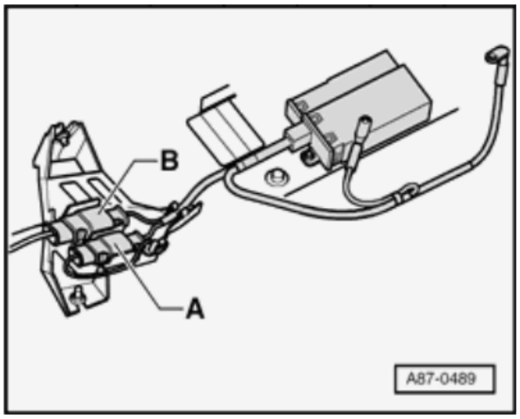

Fig. 65: Identifying Heated Windshield Control Module J505 Connectors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Depending on the version of the Heated Windshield Control Module J505 , the connector (connector - A -) is not located directly at the Heated Windshield Control Module J505 , but rather in the wiring on the right in the direction of travel next to the Battery A. Connector - B - to the Heated Windshield is also located at this point.
- The operating and display module, Climatronic Control Module J255 does not activate the Heated Windshield Control Module J505 in "ECON" mode.

SOLAR SUNROOF, ELECTRICAL TESTING

Solar sunroof, electrical testing

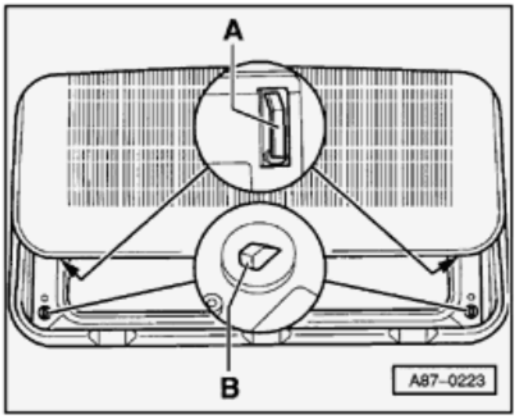

Fig. 66: Identifying Vehicle Electrical System Via Terminals And Terminals
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Solar ventilation function only works when the sunroof is either closed or in the raised position. The solar sunroof converts the solar energy into electrical energy which then passes into the vehicle electrical system via terminals - A - (on the front of the sunroof) and terminals - B - (on the frame of the sunroof).**
- **Solar operation is not possible with ignition switched on and with parking heater/parking ventilation running (Fresh Air Blower Control Module J126 breaks the connection between solar roof and Fresh Air Blower V2).**
- **On vehicles without sunroof, all A/C system control motors remain standing in their current positions at the moment when the ignition is switched off. However, in order to ventilate the vehicle interior when the system is in solar ventilation mode, the fresh air/recirculated air flap must be in the "fresh air" position. Therefore on vehicles with solar roof, the A/C control head Climatronic Control Module J255 sends via the coding the indication that the vehicle is equipped with a sunroof with Solar Cells C20. A/C control head Climatronic Control Module J255 then moves the flaps on the heating and A/C unit into the "fresh air" position after ignition is switched off.**
- **The energy supplied by the Solar Cells C20 is conveyed directly to the Fresh Air Blower V2 via the Fresh Air Blower Control Module J126. The Fresh Air Blower V2 converts the generated electrical energy into blower output.**
- **With the ignition switched off (no signal detected from Climatronic Control Module J255), the Fresh Air Blower Control Module J126 checks the voltage at the input from the solar cells in regular intervals and converts the voltage generated by the solar cells in such a way that the Fresh Air Blower V2 runs at the highest possible speed when there is sufficient solar energy.**
- **The electrical energy transferred from the Solar Cells C20 at a solar radiation level of 500 W/m ^{2} is approx. 12 W:**

500 W/m ^{2} (solar radiation) x 0.21 m ^{2} (solar cell surface area on sunroof) x 0.13 (efficiency of Solar Cells C20) x 0.9 (efficiency of Fresh Air Blower Control Module J126).

- Terminals - **A** - and - **B** - (on the sunroof and sunroof frame) are used to transfer the electrical energy generated and must always be clean and free of conventional lubricating grease.
- If necessary, terminals - **A** - and - **B** - can be lightly coated with contact grease (electrically conductive protective lubricant, available from suppliers of electronic equipment).

Solar sunroof, testing function

- Place vehicle in direct sunlight.

NOTE:

- **If weather conditions are unfavorable, the solar sunroof can be illuminated using two commercially available 1000 W halogen lamps. These must be set up at a distance of at least 500 mm (19.7 in) from the surface of the solar sunroof. So that the Solar Cells C20 can supply sufficient electrical energy to drive the Fresh Air Blower V2 , make sure that all sunroof Solar Cells C20 are illuminated completely and evenly.**

- Open the "center" instrument panel vents and close the remaining vents.
- Switch ignition off (A/C control head Climatronic Control Module J255 is dark).
- Close sunroof.

Air should be flowing from the instrument panel air vents (if necessary, check by moistening hand and holding in front of vent).

If no air flow can be detected:

- Check coding of A/C control head Climatronic Control Module J255 (for "vehicle with solar roof") --> **Climatronic Control Module J255, coding (function 07)**.
- Remove glove compartment. -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

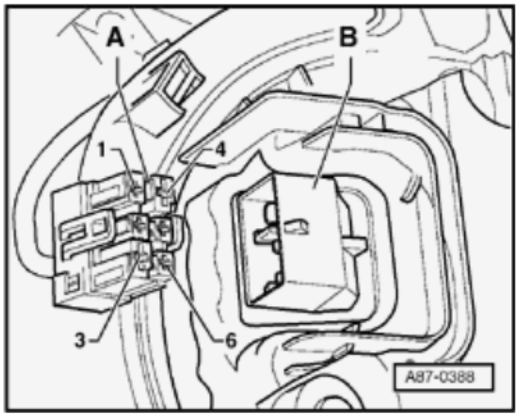

Fig. 67: Identifying Fresh Air Blower Control Module J126 Connector & Voltage Between Contact And Contact At Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect electrical connection - **A** - from Fresh Air Blower Control Module J126.
- Measure voltage between terminal - **6** - and terminal - **3** - on connector - **A** -.

- Specified value: 8 - 12 V = (depending on intensity of the solar radiation)

- Connect a test lamp (12 V with maximum 5 W) between terminals - **6** - and - **3** - on connector - **A** -.
- The test lamp should glow or light up (depending on intensity of the solar radiation).

NOTE:

- **If test lamp glows or lights up, solar roof function is OK. If Fresh Air Blower V2 does not run, check that Fresh Air Blower V2 moves freely; if no malfunction can be detected, replace Fresh Air Blower Control Module J126 with Fresh Air Blower V2.**
- **If test lamp does not glow or light up, check wire connection to both terminals at sunroof cut-out. If no malfunction can be detected, check the solar panel and --> 60 SUNROOF .**
- **Only an energy of 1.5 W is supplied when shining halogen lamps on the solar sunroof (Fresh Air Blower V2 turns, but air flow is difficult to detect).**

AIR QUALITY SENSOR G238

Air Quality Sensor G238

- The Instrument Cluster Control Module detects pollutants in the ambient atmosphere (generally gasoline emissions) and causes the operating and display module, Climatronic Control Module J255 to switch the air conditioner to "recirculated-air mode".
- The operating and display module, Climatronic Control Module J255 recognizes the nature and level of the air pollution from the Air Quality Sensor G238 signal. Depending on ambient temperature and the degree of air pollution, the operating and display module, Climatronic Control Module J255 effects the following:

  - At ambient temperatures greater than approx. + 2 °C, even a slight increase in pollutant concentration causes switching to recirculated-air mode.
  - At ambient temperatures between approx. + 2 °C and approx. -8 °C, switching to recirculated-air mode and simultaneous cut-in of compressor only take place in the event of a considerable increase in pollutant concentration.
  - At ambient temperatures below approx. -8 °C, switching likewise only takes place in the event of a considerable increase in pollutant concentration and the time period is restricted to approx. 15 s (compressor does not switch on).
  - A decrease in concentration results in the air conditioner being switched back to "fresh-air mode".

- The "automatic air recirculation" function can be deactivated at any time. If the function is active, the compressor is switched on in the event of a request for "automatic air recirculation" even at ambient temperatures below + 2 °C. At temperatures below approx. - 8 °C compressor operation is however also no longer possible.
- On vehicles with "automatic air recirculation" , the compressor may also be switched on with manually activated air recirculation (via "recirculated-air button") down to temperatures of approx. - 8 °C.
- To prevent constant air conditioner recirculated-air mode in areas with a persistently high level of pollutant emissions, the Air Quality Sensor G238 is adaptive (sensitivity is matched to environmental impact).
- If the pollutant level in the ambient air remains relatively high for a lengthy period, the Air Quality Sensor G238 starts to adapt to the change in ambient conditions by way of an adaptation program, with the result that a recirculated-air request is generally applied for less than 12 minutes given uniform ambient air pollution. In the event of several consecutive peak impact levels, the air conditioner may also operate in recirculated-air mode for a longer period.

- Switching of the air conditioner flaps takes a certain length of time. To prevent gaseous pollutants entering the passenger compartment together with the fresh air drawn in before the fresh-air flaps can close in the event of a sudden increase in pollutant levels (e.g. on driving through a cloud of diesel emissions), the vehicle is installed with a dust and pollen filter provided with an activated charcoal layer. Once a filter is saturated with pollutants, it can no longer perform this function and must be replaced --> **Dust and pollen filter element, removing and installing**.
- To stop the "recirculated-air/fresh-air flaps" being switched too frequently, switching does not take place immediately in the event of a slight increase in the pollutant level in the ambient atmosphere (Air Quality Sensor G238 does not transmit request to operating and display module, Climatronic Control Module J255). In such cases, the filter effect of the activated charcoal layer in the dust and pollen filter suffices --> **Dust and pollen filter with active-carbon-filter element**.
- To stop the "recirculated-air/fresh-air flaps" being switched too frequently, an Air Quality Sensor G238 request for "automatic recirculated-air mode" is applied for at least 25 s (minimum dwell time) even if the pollutant concentration in the air has decreased again to such an extent that recirculated-air mode would no longer be necessary.
- If the compressor is switched off (e.g. in "ECON" mode), the maximum duration for "automatic recirculated-air mode" is restricted by the operating and display module, Climatronic Control Module J255 to approx. 15 seconds to stop the windows misting up.

- To clear misted windows as quickly as possible, the operating and display module, Climatronic Control

Module J255 does not permit recirculated-air mode during "defrost" operation.

- The Air Quality Sensor G238 requires approx. 30 seconds to warm up after ignition is switched on. During this period No request is sent by the Air Quality Sensor G238 to the operating and display module, Climatronic Control Module J255 for "automatic air recirculation".
- The Air Quality Sensor G238 is a highly sensitive electronic component which could be destroyed by direct exposure to solvents, fuels and certain chemical compounds. The vehicle should therefore not be installed with Air Quality Sensor G238 which have been in contact with such substances.

Air Quality Sensor G238 , checking

Special tools and equipment

- Diagnostic Operation System VAS 5051A e.g. with Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A)
- Test gas "D 007 855 A2"

NOTE:

- **The vehicle must be standing in a clean atmosphere (away from running engines, exhaust vents, etc.).**
- **The engine compartment and plenum chamber must be clean (not contaminated with oil or fuel).**
- **The engine compartment and plenum chamber must not have been sprayed with cleaning agents or preservatives containing solvents.**

Checking

- Remove plenum chamber cover.
- With the ignition switched off, connect Diagnostic Operation System VAS 5051A using, for example, Diagnostic Cable - 3 Meter VAS 5051/5A and K-Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A) to the 16-pin diagnostic socket in the vehicle --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.
- Start engine.
- Check DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)**.

- On operating and display module, Climatronic Control Module J255 , set "Auto" mode.

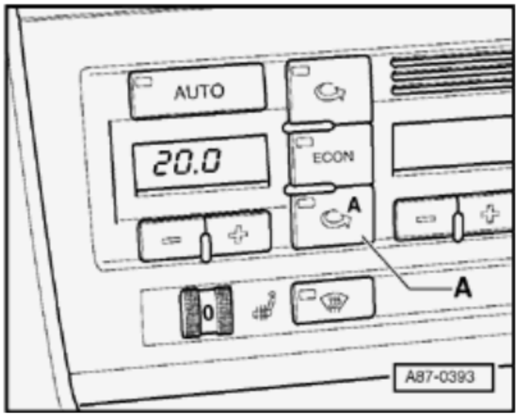

Fig. 68: Identifying "Automatic Air Recirculation" Button
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- "Automatic air recirculation" button - **A** - pressed (LED in button - **A** - lights).
- Wait 30 s to allow Air Quality Sensor G238 to warm up.

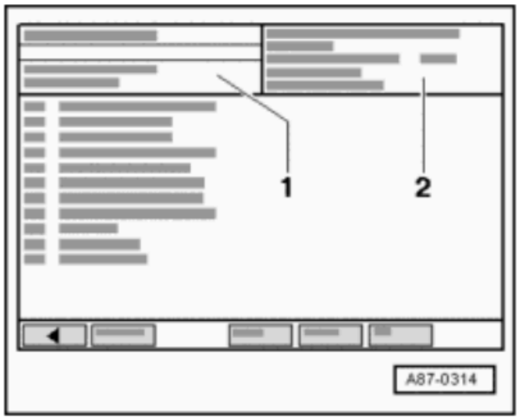

Fig. 69: Locating Control Module Identification With Code Indicated On The Display
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Indicated on display of Diagnostic Operation System VAS 5051A :

- Select function "08 - Reading measuring value block".

Indicated on display of Diagnostic Operation System VAS 5051A :

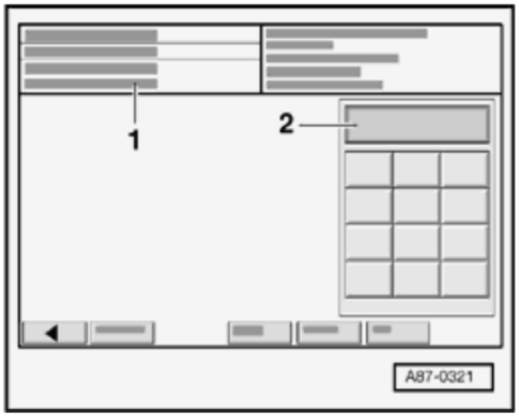

Fig. 70: Identifying Prompt For Entering Display Group Appears In Display Zone & Input Keypad Appears In Display Zone
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Prompt for entering display group appears in display zone - **1** -.
- Input keypad appears in display zone - **2** -.

- Use input keypad in display zone - **2** - to enter desired display group number "014" --> **Overview of selectable display group numbers**.
- Confirm entry with Q key.
- Read displays in zones "3" and "4".

NOTE:

- **Display field "4" indicates operating status of air conditioner (fresh-air or recirculated-air mode), whereas display zone "3" shows status of Air Quality Sensor G238 signal. Remarks on possible displays and**

Specified value in display zone "4"

- "00" (no request for "recirculated-air mode" , air conditioner in fresh-air mode)

Or

- "60" ("partial recirculated-air mode" , fresh-air and recirculated-air flap open)

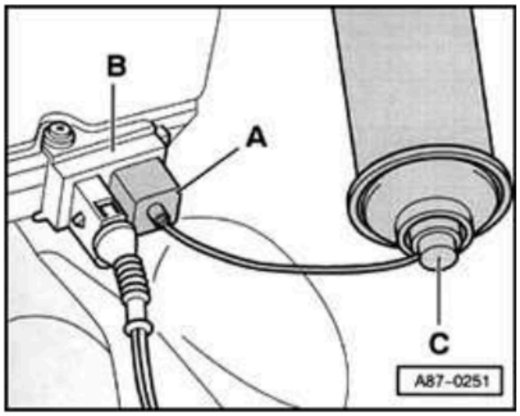

Fig. 71: Positioning Spray Attachment Of Test Gas Canister Over Air Inlet Of Air Quality Sensor G238 (With Version "1" Of Air Quality Sensor G238)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position spray attachment - **A** - of test gas canister over air inlet of Air Quality Sensor G238 - **B** - (with version "1" of Air Quality Sensor G238).

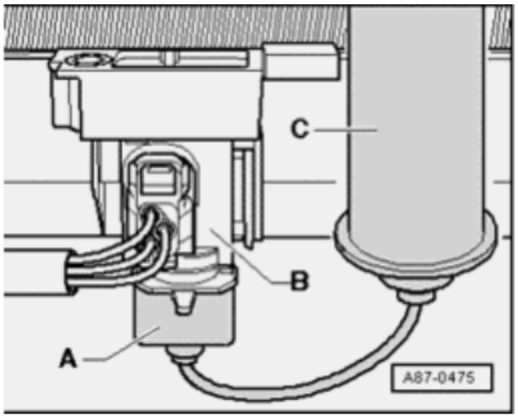

Fig. 72: Positioning Spray Attachment Of Test Gas Canister Over Air Inlet Of Air Quality Sensor G238 (With Version "2" Of Air Quality Sensor G238)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Position spray attachment - **A** - of test gas canister over air inlet of Air Quality Sensor G238 - **B** - (with version "2" of Air Quality Sensor G238).
- Press spray knob - **C** - of test gas canister for approx. 1 second.

NOTE:

- **There are different Air Quality Sensor G238 housings. Version "1" was installed at the start of production. This sensor is gradually being replaced by version "2" , however the mode of operation is identical.**
- **The test gas canister is filled with pure oxygen with a specific nitrogen oxide component.**
- **The Air Quality Sensor G238 also reacts when exposed to cigarette smoke or cigarette lighter gas (gas is heavier than air, the Air Quality Sensor**

G238 must therefore be removed and turned round).

- Read off display in zone "4".

Specified value:

- "10" ("Automatic air recirculation mode" requested, request met, air conditioner switches to recirculated-air mode)

- Wait briefly approx. 1 minute, depending on amount of test gas sprayed onto Air Quality Sensor G238).
- Read off display in zone "4".

Specified value:

- "00" (no request for "recirculated-air mode" , air conditioner in fresh-air mode)

Or

- "60" (Partial recirculated-air mode)

NOTE:

- **To stop the recirculated-air/fresh-air flaps being switched too frequently, an Air Quality Sensor G238 request for "automatic recirculated-air mode" is applied for at least 25 s (minimum dwell time) even if the pollutant concentration in the air has decreased to such an extent that recirculated-air mode would no longer be necessary.**

- Activate windshield wash/wipe switch until Windshield Washer Pump V5 has conveyed fluid for approx. 2 s.
- Read off display in zone "4".

Specified value:

- "30" ("Recirculated-air mode" requested because of windshield washer system, air conditioner switches to recirculated-air mode for approx. 10 sec.)

NOTE:

- **The request for "recirculated-air mode" during windshield washer system operation is not implemented with all versions of the operating and display module, Climatronic Control Module J255.**

- Wait briefly.
- Read off display in zone "4".

Specified value:

- "00" (no request for "recirculated-air mode" , air conditioner in fresh-air mode)

Or

- "60" (Partial recirculated-air mode)

NOTE:

- **Depending on the composition of the windshield washer fluid, the Air Quality Sensor G238 may detect air pollution and request "Automatic air recirculation".**
- **If switching to recirculated-air mode does not take place on activating windshield wipe/wash switch, check operation of Wiper/Washer Intermittent Relay J31 if applicable ("windshield wash" information is received via the CAN-Bus comfort system from the Steering Column Electronic Systems Control Module J527) (Reading measuring value block, display group "018").**

Proceed as follows if the Air Quality Sensor G238 functions properly in this test but a customer complaint has been received:

- Check for contamination of dust and pollen filter.
- Connect Diagnostic Operation System VAS 5051A for example and select function "08 Reading measuring value block" for air conditioner.
- Enter display group number "014" and read off displays in zones "3" and "4".

NOTE:

- **A second person is required to read out the values displayed while driving.**
- **Pay attention to safety precautions --> Safety precautions.**

- Perform a test drive, starting in an area with a relatively clean ambient atmosphere (system operating in fresh-air mode) and then proceeding to an area where the atmosphere is polluted (e.g. uphill road with truck traffic).

NOTE:

- **The display in zones "3" and "4" in display group "014" must change, for example, on driving through a cloud of diesel emissions --> Overview of selectable display group numbers.**
- **Also pay attention to the notes on the dust and pollen filter --> Dust and pollen filter with active-carbon-filter element and on operation of the Air Quality Sensor G238 --> Air Quality Sensor G238.**

87 AIR CONDITIONING

SAFETY PRECAUTIONS

Safety precautions

The following safety precautions have to be observed for these cooling aids (additional laws may apply for different countries).

The assemblies and lines of the air conditioner are filled with the following refrigerant:

1.1.1.2 Tetrafluoroethane (CF_3-CH_2F or CH_2F-CF_3)

This refrigerant is commonly known as R-134a, H-FKW 134a, SUVA 134a and KLEA 134a (in the USA different names may apply as well).

Refrigerant R-134A replaces the refrigerant R-12 which is reported to have harmful effects on the ozone layer of the earths atmosphere.

R-134a and R-12 systems are similar in design but there are very important differences in the refrigerants, lubricating oils, service equipment and A/C system components.

Safety precautions for handling of refrigerant

If it is necessary to open the refrigerant circuit during service work, discharge the refrigerant circuit first (--> **Discharge refrigerant circuit**). Avoid contact with liquid refrigerant or refrigerant gases. If refrigerant should escape although all safety caution were observed, do not inhale refrigerant/air mixture.

Always wear hand and eye protection (gloves and goggles) when working around the A/C refrigerant system and switch on existing exhaust/ventilation systems.

Reason:

Intensive exposure to refrigerant on unprotected parts of the body will result in frostbite.

CAUTION: Keep an eye-bath close at hand.

Should liquid refrigerant come into contact with the eyes, rinse eyes thoroughly with water for approx. 15 minutes.

Then apply eye drops and consult a doctor immediately even if No pain is felt.

Always inform doctor of the type of refrigerant involved.

Equipment must be approved!

- **Always use an Underwriters Laboratory (UL) approved refrigerant recovery/recycling/recharging unit such as Kent-Moore ACR4, or equivalent, whenever discharging an R-134a A/C system.**

Technicians must be trained!

- **As of January 1, 1992 any person who services a motor vehicle air conditioner MUST, by law, be properly trained and certified and use approved refrigerant recycling equipment. Technicians must complete an EPA approved recycling course to be certified.**
- **State and Provincial governments may have additional requirements regarding air conditioning servicing. Always comply with state and local laws.**

CAUTION: Use Refrigerant with care!

- **The A/C system is filled with refrigerant which is under pressure.**
- **The refrigerant must not come in contact with your skin.**
- **It is recommended to have an eye-flushing bottle available.**
- **If liquid refrigerant has come in contact with your skin and eyes, immediately flush with cool water for 15 minutes.**

- **Afterward apply eye drops and consult a doctor immediately, even when the eyes are not hurting.**
- **The doctor must be informed, which type of refrigerant caused the freezing.**

Should refrigerant come into contact with other parts of the body despite compliance with all the pertinent safety measures, these are similarly to be rinsed thoroughly with cold water without delay for at least 15 minutes.

Although refrigerants do not represent a fire hazard, smoking, welding, soldering and brazing are not permitted in areas exposed to refrigerant.

Reason:

The high temperature of a naked flame or hot objects causes decomposition of refrigerant gas. Inhalation of the resultant toxic decomposition products leads to dry coughing and nausea.

Discharge refrigerant circuit

Refrigerant is never to be allowed to escape into the atmosphere, but is rather to be extracted from the refrigerant circuit using an extractor or service station. The refrigerant removed is then either to be reprocessed on site or returned to the manufacturer for proper disposal (different or additional regulations may apply in other countries). --> **87 - AIR CONDITIONING**

Reason:

Should it escape into the earths atmosphere, refrigerant R134a will have a detrimental effect in terms of global warming.

NOTE:

- **Refrigerant R134a has far less of a greenhouse effect than R12.**
- **The refrigerant R134a does not affect the ozone layer in the earths atmosphere (R134a is an H-FC with no chlorine atoms). Depletion of the ozone layer in the upper atmosphere is however only brought about by the splitting of carbon-chlorine bonds (as is the case, for example, with refrigerant R12).**

After discharging the air conditioner, disconnect the connector from the A/C Compressor Regulator Valve N280 or from the High Pressure Sensor G65.

Reason:

The A/C Compressor Regulator Valve N280 is then no longer activated and the compressor runs at idle. The compressor is designed such that lubrication of the compressor components is guaranteed by way of an internal oil circuit at idle (provided there is sufficient refrigerant oil in the compressor).

Work on refrigerant circuit

Work on the refrigerant circuit is only to be performed in well ventilated areas where there are no inspection pits, shafts or cellar entrances within a radius of 5 meters. Extraction systems are to be switched on.

Reason:

The refrigerant emerging is not only colorless and odorless, but also heavier than air and thus displaces oxygen. Should refrigerant gas nevertheless escape, this can result in an imperceptible danger of asphyxiation in poorly ventilated areas and inspection pits.

NOTE:

- **The mixture of gas and air which forms when refrigerant gas escapes must not be inhaled. Use must be made of suitable workshop extractors.**

Welding, brazing and soldering are not permitted on sections of the air conditioner when filled. This also applies to vehicle welding and soldering work if there is a danger of air conditioner components becoming warm.

Reason:

Exposure to heat creates considerable pressure in the system which could cause it to burst.

Remedy:

Discharge refrigerant circuit --> **Discharge refrigerant circuit** and --> **87 - AIR CONDITIONING** .

NOTE:

- **Damaged or leaking parts of the air conditioner are never to be repaired by**

welding or soldering them. They are always to be replaced.

When servicing the air conditioner, all open components and line connections are to be immediately resealed.

Reason:

Moisture will ingress into air conditioner components if they are left open for a lengthy period. If this is the case, air conditioners cannot be refilled without having to replace parts of the system.

On vehicles with A/C systems

When performing paint work repairs, object temperatures of 80 °C are not to be exceeded in drying booths or their preheating zones.

Reason:

Exposure to heat creates considerable pressure in the system which could cause it to burst.

A/C SYSTEM, GENERAL REPAIR GUIDELINES

A/C system, general repair guidelines

It is only permissible if so required by the pertinent safety regulations --> **Work on refrigerant circuit** , or if parts of the air conditioner refrigerant circuit have to be replaced, to drain and open the air conditioner refrigerant circuit (Refer to --> **Discharge refrigerant circuit** and --> **87 - AIR CONDITIONING**).

The air conditioner refrigerant circuit must also remain closed during all other normal vehicle repair operations.

Service work which can be performed on the heater and air conditioner without opening the refrigerant circuit is described in this article --> **A/C system control and regulation components**.

NOTE:

- **The connections for the sensors/switches described in this article are installed with a valve which closes automatically when the switches are unscrewed. These switches can therefore be replaced at any VW/Audi workshop without discharging the refrigerant circuit.**

Air conditioner servicing work which involves discharging the refrigerant circuit and can therefore not be performed at every VW/Audi workshop is described in --> **A/C refrigerant system, servicing** and --> **87 - AIR CONDITIONING**

NOTE:

- **With the Audi Cabrio, different settings are stored for closed and open convertible top in the operating and display module, Climatronic Control Module J255. On opening and closing the convertible top, the operating and display module, Climatronic Control Module J255 then automatically alters the setting to the value last set with convertible top closed or open.**

- **As of April 2002, operating and display modules, Climatronic Control Module J255 with part number index "H" onwards (with hardware/software version as of "XX15") have gradually been installed. With these operating and display modules, Climatronic Control Module J255 , the passenger compartment temperature regulation is designed to be somewhat cooler.**
- **Vehicles as of Model Year 2003 are only to be installed with operating and display modules, Climatronic Control Module J255 with part number index "H" onwards.**
- **Vehicles with 4-cyl. engine and gasoline direct injection (FSI) are only to be installed with operating and display modules, Climatronic Control Module J255 with part number index "H" onwards.**
- **As of Model Year 2003, operating and display modules, Climatronic Control Module J255 with part number index "H" onwards (with hardware/software version as of "XX16") have gradually been installed. These operating and display modules, Climatronic Control Module J255 differ as follows from the model with software version "XX15" :**
- **- Modified passenger compartment temperature regulation for Audi Cabrio and open convertible top (designed to be somewhat cooler)**
- **- Extended temperature adjustment range; 16 °C (instead of 18 °C) is now the lowest temperature which can be set**
- **Vehicles up to VIN "399999" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN) are not to be installed with operating and display modules, Climatronic Control Module J255 with part number index "AJ" onwards. Parts Catalog**
- **Vehicles as of VIN "400000" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN) are only to be installed with operating and display modules, Climatronic Control Module J255 with part number index "AJ" onwards.**

REFRIGERANT SYSTEM, SERVICING

Refrigerant system, servicing

NOTE:

- **For servicing work on refrigerant circuit, refer to --> A/C refrigerant system, servicing or --> 87 - AIR CONDITIONING**
- **All parts/operations marked 1) can be serviced and replaced/performed at any workshop (work not involving refrigerant circuit).**
- **On vehicles with 8-cyl. engine, the compressor is not driven via a belt, but rather by way of a shaft --> Vehicles with 8 cyl. engine (compressor drive via a shaft).**

Component overview

HD = High pressure side

ND = Low pressure side

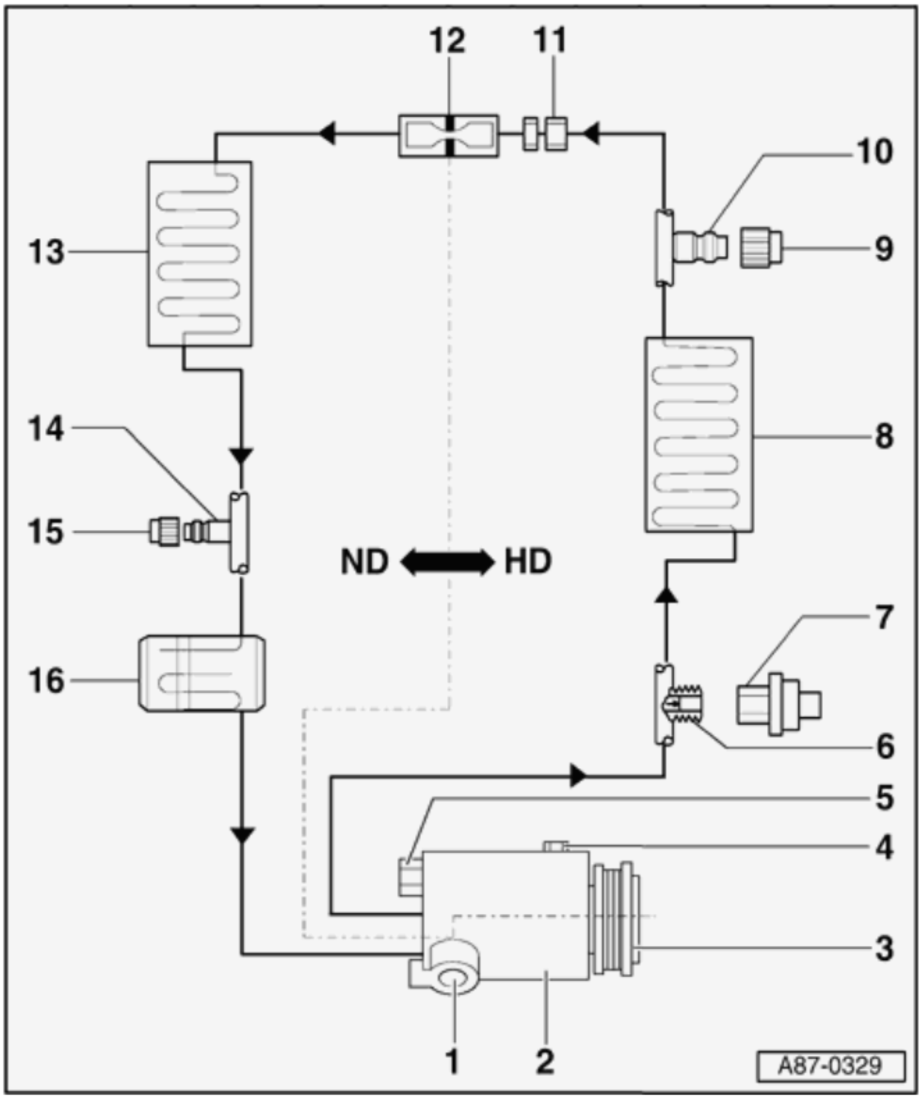

Fig. 73: Refrigerant System Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - A/C Compressor Regulator Valve N280

- Checking activation and function **Vehicles with 4 or 6 cyl. engine (compressor drive via a belt)**

2 - Compressor

- Removing compressor from bracket/reinstalling --> **Compressor, removing and installing from**

bracket and **Vehicles with 4 or 6 cyl. engine (compressor drive via a belt)**

- When installing refrigerant lines and corresponding bracket, make sure there is sufficient distance between belt, bracket and pulley.
- Type of compressor differs depending on engine (installed to right or left of engine)
- Different types of compressor are installed depending on country version (e.g. "Denso" type designation "6 SEU" for Europe and "7 SEU" for hot countries)

3 - Belt pulley/compressor drive unit to engine

- Replacing belt pulley --> **Belt pulley/drive unit of compressor, replacing**
- Removing and installing ribbed belt **Vehicles with 4 or 6 cyl. engine (compressor drive via a belt)** and -->
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
    - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF
- Ribbed belt assignment
- Checking and replacing compressor drive unit --> **Compressor drive unit, checking, replacing**

NOTE:

- **A rubber element is installed between pulley/drive unit and drive shaft of compressor to protect belt/drive pinion unit in the event of compressor blockage or stiffness.**
- **If the compressor is not operating smoothly, the rubber element interrupts power transmission to the compressor.**
- **A rubber element is installed between the engine and compressor to protect the drive pinion unit in the event of compressor blockage or stiffness.**
- **The rubber element absorbs any vibration occurring during compressor operation (damper function in the case of torque fluctuations).**

4 - Oil drain plug

5 - Pressure relief valve

6 - Circuit with valve

7 - High Pressure Sensor G65 **Vehicles with 4 or 6 cyl. engine (compressor drive via a belt)**

- Removing and installing --> **High Pressure Sensor G65 , removing and installing**
- Checking signal

8 - Condenser

9 - Closing cap

- With seal
- Reinstall after using service valve

10 - Service connection

- High pressure side
- For measuring, discharging and filling

11 - Bolts in refrigerant line

12 - Restrictor

13 - evaporator

14 - Service connection

- Low pressure side
- For measurement and drainage

15 - Closing cap

- With seal
- Reinstall after using service valve

16 - Catch

High Pressure Sensor G65 , removing and installing

- Remove front bumper -->
  - **50 BODY, FRONT**
  - **50 - BODY - FRONT** for BODY EXTERIOR - CABRIOLET

.

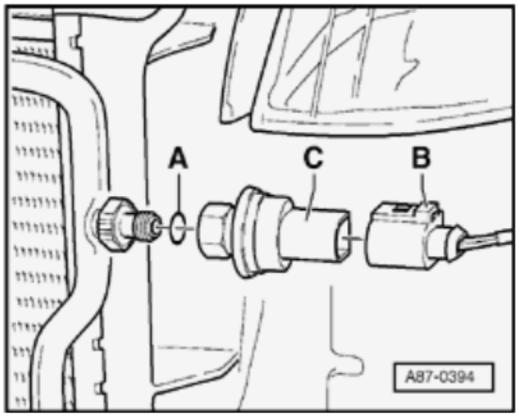

Fig. 74: High Pressure Sensor G65 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **B** -.
- Remove High Pressure Sensor G65 - **C** - , tightening torque: 5 Nm.
- Replace O-ring - **A** - (10.8 mm; 1.8 mm) --> **O-ring seals for refrigerant circuit**.

NOTE:

- **The cooling output cannot be checked with the High Pressure Sensor G65 removed; the operating and display module, Climatronic Control Module J255 does not switch on the compressor.**
- **The refrigerant circuit remains closed, "connection with valve".**
- **Checking operation of High Pressure Sensor G65 and signal supplied and.**

O-ring seals for refrigerant circuit

- Always replace, only to be used once.
- Moisten slightly with refrigerant oil before installing.
- Ensure correct positioning on line/in groove.
- Ensure cleanliness when working.

NOTE:

- **Only O-rings which are resistant to refrigerant R134a and the corresponding refrigerant oil may be installed. Such O-rings are color coded to prevent mix-ups (currently "red" , "light purple" or "dark purple"):**
- **In addition to the colored O-rings, black O-rings are also used at the factory for certain connections.**

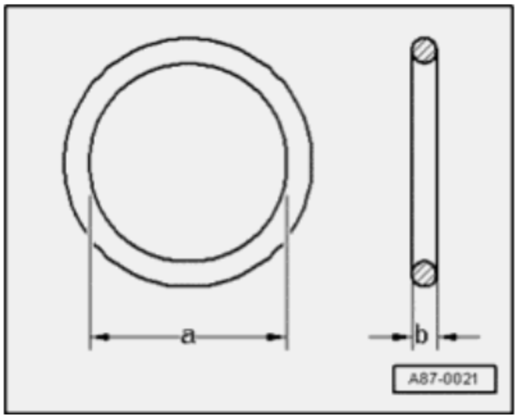

Fig. 75: O-Rings Dimensions
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **Dimensions - a - and - b - differ depending on installation of O-ring:**
- **In January 2003, the connections between the refrigerant lines and the various components (condenser, evaporator etc.) were converted from radial/axial sealing to radial sealing. It is only permissible to combine components with the same type of seal and the corresponding O-rings (different versions). Reliable sealing of the joints cannot be ensured if components with different forms of sealing are installed.**

COMPRESSOR, REMOVING AND INSTALLING FROM BRACKET

Vehicles with 4 or 6 cyl. engine (compressor drive via a belt)

NOTE:

- **The compressor can be removed from the bracket and reinstalled without opening up the refrigerant lines.**
- **Do not drain the refrigerant circuit, do not remove refrigerant hoses and lines at the compressor.**
- **After removing, use wire to attach the compressor to the longitudinal member. Never leave hanging from refrigerant lines.**
- **Before removing, mark the direction of the ribbed belt with chalk or a felt-tip pen. Running a used belt in the opposite direction could destroy it.**
- **Different compressors are installed depending on engine and country version (installed to right or left of engine, 6-cyl. engine, cold or hot country).**

Compressor, removing and installing from bracket

NOTE:

- **The compressor is installed to the left of the engine, for example, on the 1.6l gasoline engine and with 6-cyl. engines.**
- **Do not unfasten refrigerant lines and the corresponding clamps.**

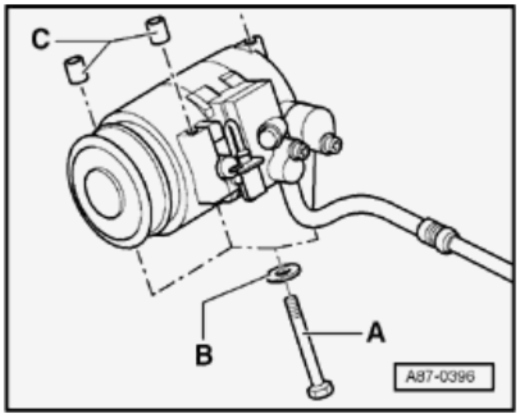

Fig. 76: Identifying Compressor For 4-Cyl. Gasoline Turbo Engine
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **The illustration shows the compressor for the 4-cyl. gasoline turbo engine. The layout for the other engine versions only differs slightly from this illustration (e.g. different refrigerant lines).**

- Remove noise insulation -->
  - **50 BODY, FRONT**
  - **50 - BODY - FRONT** for BODY EXTERIOR - CABRIOLET

  .
- Move lock carrier to service position (only if service position is required for ribbed belt and compressor removal, e.g. on 6-cyl. engine; not required for example with 2.0 l 4-cyl. engine) -->
  - **17 - ENGINE - LUBRICATION** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **17 - ENGINE - LUBRICATION** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **17 ENGINE - LUBRICATION** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **17 - ENGINE - LUBRICATION** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **17 - ENGINE - LUBRICATION** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **17 - ENGINE - LUBRICATION** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

  and -->
  - **50 BODY, FRONT**
  - **50 - BODY - FRONT** for BODY EXTERIOR - CABRIOLET

  .
- Remove oil filter. Protect sealing surfaces against damage (only required for certain 6-cyl. gasoline engines) -->

    - **17 - ENGINE - LUBRICATION** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
    - **17 - ENGINE - LUBRICATION** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
    - **17 ENGINE - LUBRICATION** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
    - **17 - ENGINE - LUBRICATION** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
    - **17 - ENGINE - LUBRICATION** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
    - **17 - ENGINE - LUBRICATION** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

- Loosen and remove ribbed belt (ribbed belt for air conditioner compressor). -->
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
    - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
    - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF
- Remove bolts - **A** - (25 Nm).

NOTE:

- **Install one washer - B - at each of the bolts - A -.**
- **Before mounting compressor, check position of both bushes - C - in bracket or compressor.**

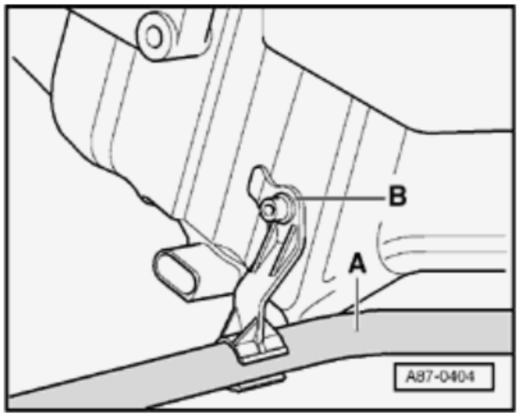

Fig. 77: Identifying Refrigerant Lines & Brackets
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **After mounting compressor, check routing of refrigerant lines - A - (lines must be inserted in brackets - B - provided).**
- **After mounting compressor, also check refrigerant lines and corresponding brackets for adequate clearance with respect to other components. Ensure sufficient distance between belt, bracket and pulley on vehicles with 6-cyl. engine.**

Vehicles with 8 cyl. engine (compressor drive via a shaft)

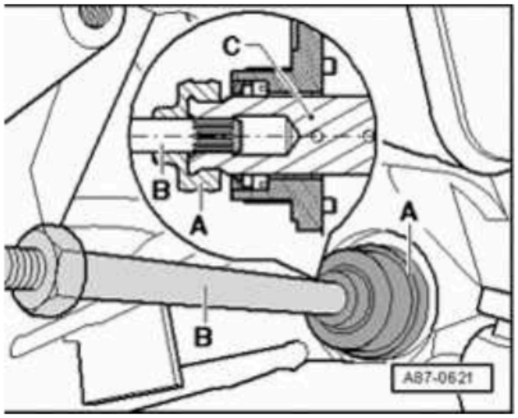

Fig. 78: Removing/Installing Boot & Pulling Drive Shaft Out/In Of Splines Of Drive Pinion
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The compressor is driven via a gear wheel and a shaft - B -.**
- **Removing and installing compressor bracket from engine. -->**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT**
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK for 3.0 LITER 6-CYL.**

    5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS**
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF**
- **On vehicles with 8-cyl. engine, removing compressor involves discharging refrigerant circuit and then removing both refrigerant lines from compressor --> Refrigerant lines on compressor, removing and installing and --> 87 - AIR CONDITIONING .**
- **Removing compressor from bracket and install again --> Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine)**

BELT PULLEY/DRIVE UNIT OF COMPRESSOR, REPLACING

Belt pulley (version "1"), replacing

NOTE:

- **Various pulley designs are installed depending on type of compressor and engine .**
- **Belt pulley, removing from compressor and reinstalling --> Belt pulley, removing from compressor and reinstalling (version "1")**

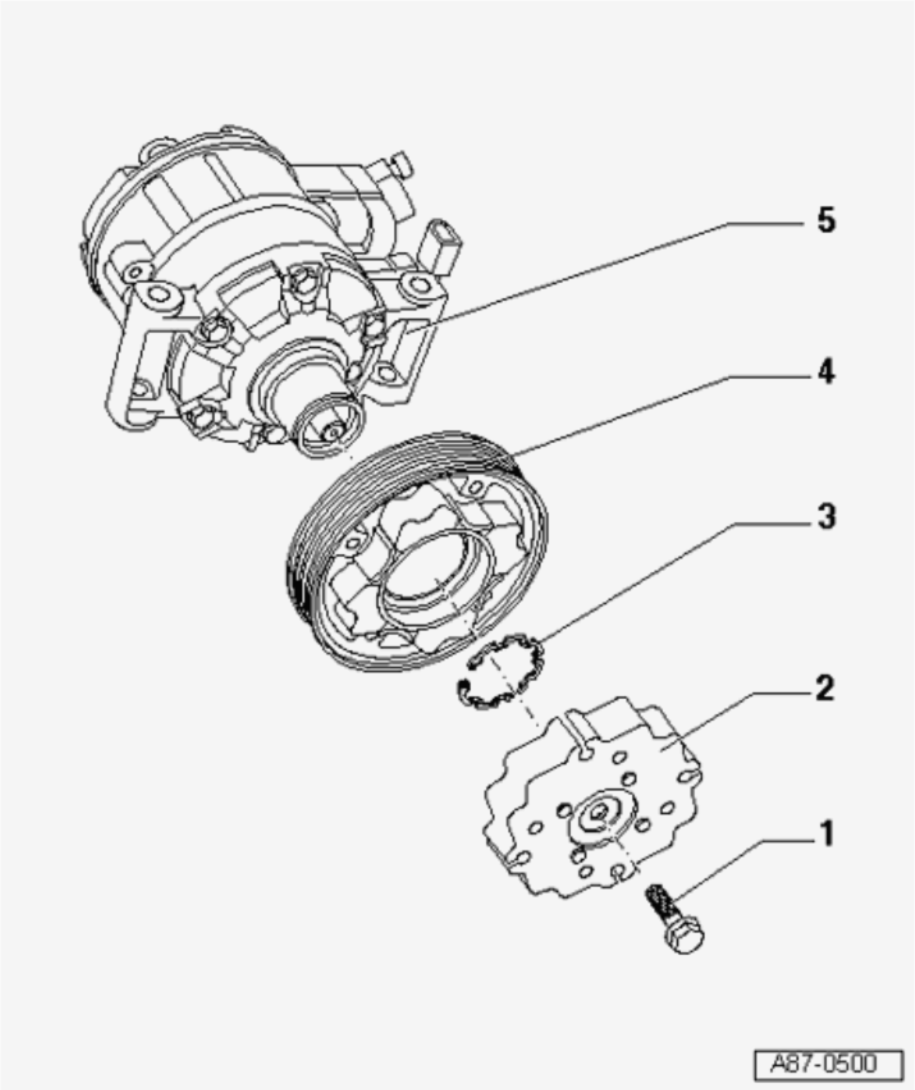

Fig. 79: Belt Pulley (Version "1"), Replacing Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bolt

- Replace
- Tightening torque 20 Nm
- Loosening and tightening --> **Belt pulley, removing from compressor and reinstalling (version "1")**

2 - Drive plate

- Different versions
- Removing and installing --> **Belt pulley, removing from compressor and reinstalling (version "1")**
- Triggered in the event of excessive torque (e.g. compressor stiff)

3 - Securing ring

- Replace
- Ensure correct positioning (flat side facing compressor)
- Removing and installing --> **Belt pulley, removing from compressor and reinstalling (version "1")**

4 - Belt pulley

- Rubber element of pulley is triggered in the event of excessive torque (e.g. stiff compressor) and pulley just free-wheels without driving compressor
- Different versions
- Removing and installing --> **Belt pulley, removing from compressor and reinstalling (version "1")**

NOTE:

- **Under certain conditions (e.g. rough engine running), rubber element of pulley may be triggered when there is no compressor or refrigerant circuit fault.**

5 - Compressor

- Different models are installed depending on engine and country version
- Clean compressor flange before sliding on pulley

Belt pulley, removing from compressor and reinstalling (version "1")

NOTE:

- **If the pulley overload safeguard has been triggered, check freedom of movement of the compressor before replacing the pulley. Replace entire compressor if it is stiff.**
- **Operation of pulley overload safeguard 240Audi A2**
- **Depending on engine version, removal of pulley may involve separating compressor from engine --> Compressor, removing and installing from bracket.**
- **The compressor can be removed from the bracket and reinstalled without opening up the refrigerant lines.**
- **Before removing, mark direction of ribbed belt with chalk or felt-tip pen. Running a used belt in the opposite direction could destroy it.**
- **Different compressors are installed depending on engine and country version (installed to right or left of engine, 6-cyl. gasoline engine, cold or hot country).**

Removing

- Remove noise insulation -->
  - **50 BODY, FRONT**

  - **50 - BODY - FRONT** for BODY EXTERIOR - CABRIOLET

.

- Move lock carrier to service position -->
  - **50 BODY, FRONT**
  - **50 - BODY - FRONT** for BODY EXTERIOR - CABRIOLET

.

- Loosen and remove ribbed belt. -->
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

Belt pulley, removing from compressor and reinstalling (version "1")

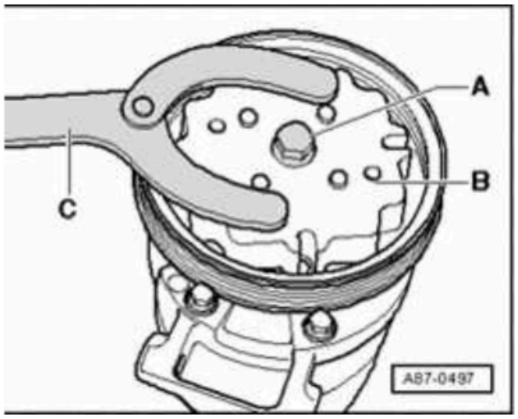

Fig. 80: Removing Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **A** - (tightening torque 20 Nm).

NOTE:

- **If pulley cannot be removed with compressor in position, separate compressor from engine --> Compressor, removing and installing from bracket.**
- **When loosening off and tightening bolt - A - , provide support with**

- **commercially available pin wrench - C - (pin diameter 5.0 mm) at drive plate - B -.**
- **Bolt - A - must be replaced (because of locking fluid).**

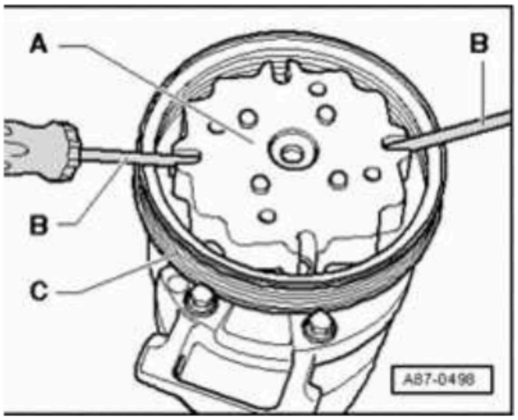

Fig. 81: Prying Off Drive Plate Using 2 Screwdrivers
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully and evenly pry off drive plate - **A** - using 2 screwdrivers - **B** -.

NOTE:

- **When prying off drive plate - A - , take care not to damage collar of pulley - C -.**
- **There are different types of pulley - C - and drive plate - A -. Attention must therefore be paid to precise assignment.**

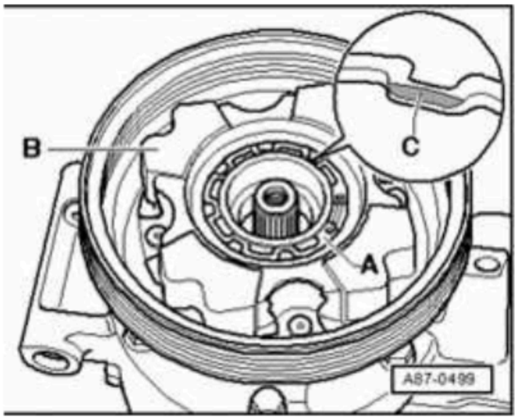

Fig. 82: Removing Securing Ring & Pulley
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove securing ring - **A** -.
- Remove pulley - **B** -.

NOTE:

- **Replace securing ring - A -.**

- **When installing securing ring - A - , take care not to bend it open more than necessary.**
- **Ensure correct insertion of securing ring - A -. Bevelled side - C - faces away from compressor (flat side faces compressor).**
- **Make sure securing ring is properly positioned in groove at compressor flange.**
- **Clean compressor flange before sliding on pulley. Belt pulley must be easy to fit (without having to exert force).**

Belt pulley (version "2"), replacing

NOTE:

- **Various pulley designs are installed depending on type of compressor and engine .**
- **Belt pulley, removing from compressor and reinstalling --> Belt pulley, removing from compressor and reinstalling (version "2")**

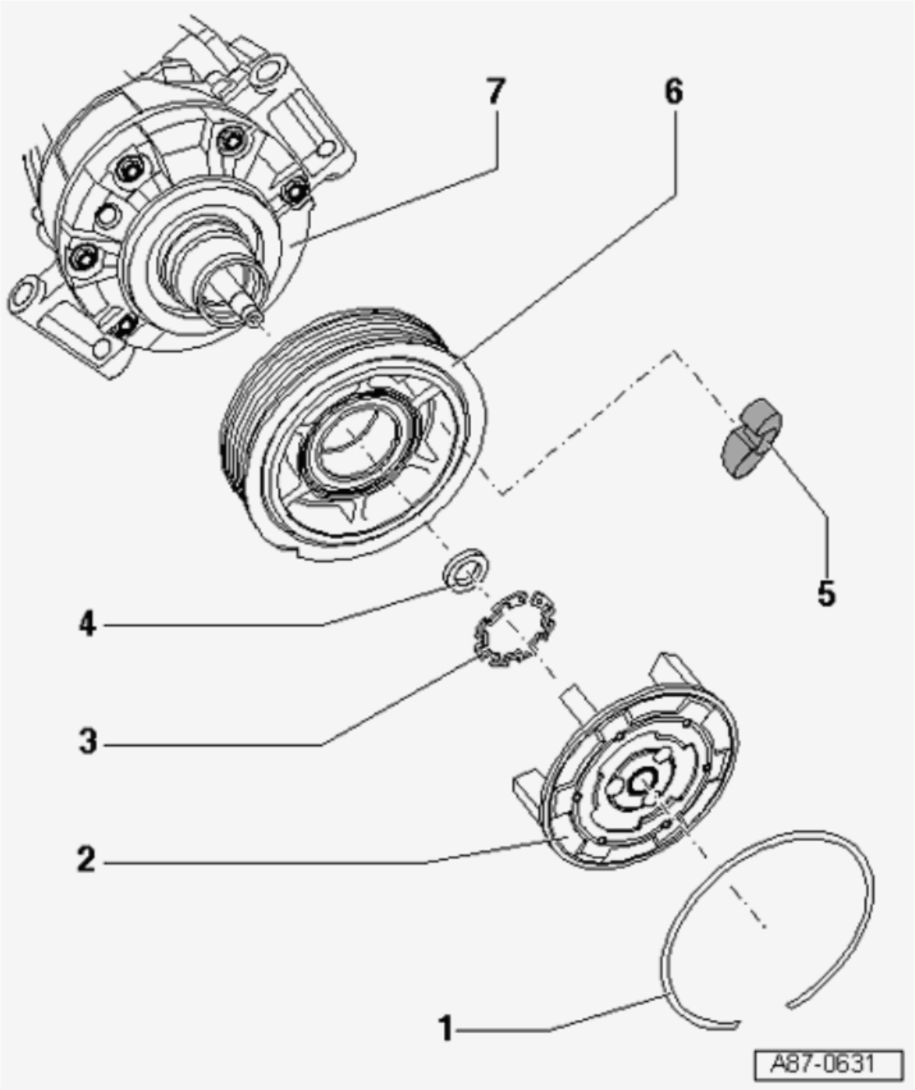

Fig. 83: Belt Pulley (Version "2"), Replacing Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Securing ring

- Remove carefully using small screwdriver or pointed-nose pliers (paying particular attention to pulley)
- Removing and installing --> **Belt pulley, removing from compressor and reinstalling (version "2")**

2 - Drive plate

- Bolted to compressor drive shaft
- Different versions
- With overload safeguard, triggered in the event of excessive torque (e.g. stiff compressor) and pulley just free-wheels without driving compressor
- Removing and installing --> **Belt pulley, removing from compressor and reinstalling (version "2")**

- Tightening torque 35 Nm

3 - Securing ring

- Replace
- Ensure correct positioning (flat side facing compressor)
- Removing and installing --> **Belt pulley, removing from compressor and reinstalling (version "2")**

4 - Spacing disc

- Dimensions: 17.5 x 10 x 3 mm

5 - Rubber element

- 6x, ensure correct installation --> **Belt pulley, removing from compressor and reinstalling (version "2")**
- Decouples pulley from compressor drive shaft, damps vibration and sound
- When installing, moisten rubber elements slightly with mounting paste or soap solution for example to provide lubrication

6 - Belt pulley

- Belt pulley is made of plastic, is sensitive to impact and should be treated with extreme care.
- Different versions
- Removing and installing --> **Belt pulley, removing from compressor and reinstalling (version "2")**

7 - Compressor

- Different models are installed depending on engine and country version
- Clean compressor flange before sliding on pulley

Belt pulley, removing from compressor and reinstalling (version "2")

NOTE:

- **Observe notes on removal of version "1" pulley, as these also apply to version "2" --> Belt pulley, removing from compressor and reinstalling (version "1").**
- **Perform preparatory work as described for removing version "1" pulley --> Belt pulley, removing from compressor and reinstalling (version "1").**
- **Belt pulley is made of plastic, is sensitive to impact and should be treated with extreme care.**

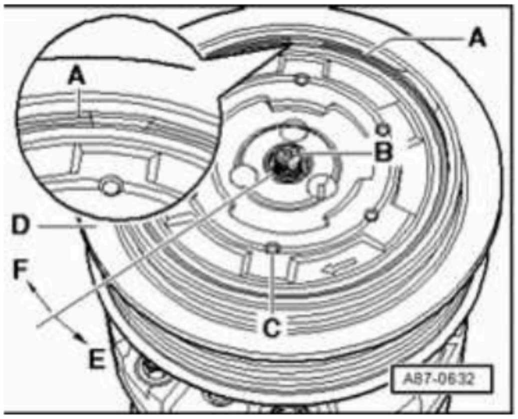

Fig. 84: Ribbed Belt Pulley - "Denso" A/C Compressor Remove/Install Components (1 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **If overload safeguard of drive plate - C - has been triggered, remove securing ring - A - and then pry drive plate off pulley - D -.**

Belt pulley, removing from compressor and reinstalling (version "2")

Removing

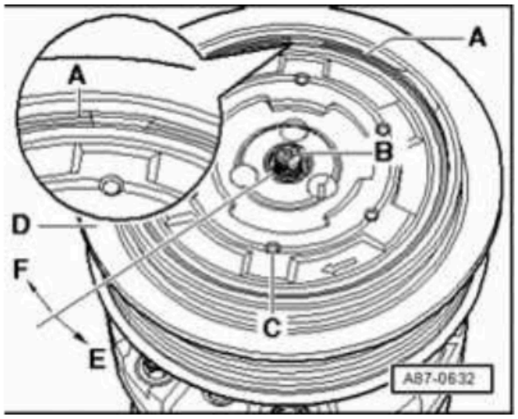

Fig. 85: Ribbed Belt Pulley - "Denso" A/C Compressor Remove/Install Components (1 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use small screwdriver or pointed-nose pliers to carefully remove securing ring - **A** - (take particular care not to damage pulley).
- Hold compressor drive shaft - **B** - in position with socket wrench T10001/10 from wrench set and turn drive plate - **C** - with pulley - **D** - in direction of arrow - **E** - (tightening torque 35 Nm).

NOTE:

- **There are different types of compressor drive shaft. The drive shafts installed at the start of production cannot be supported using an Allen key (use socket wrench T10001/10 for example). Use was later made of compressors with a hexagon end on the drive shaft.**

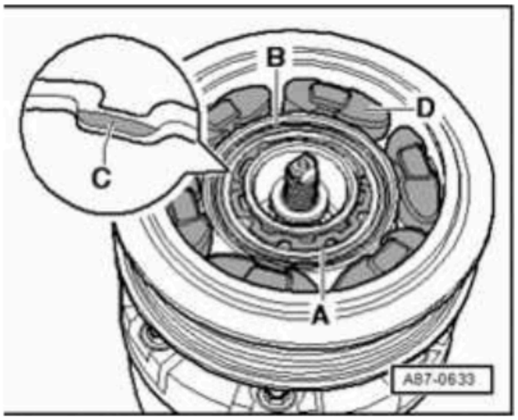

Fig. 86: Ribbed Belt Pulley - "Denso" A/C Compressor Remove/Install Components (2 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove securing ring - **A** -.
- Remove pulley - **B** -.

Installing

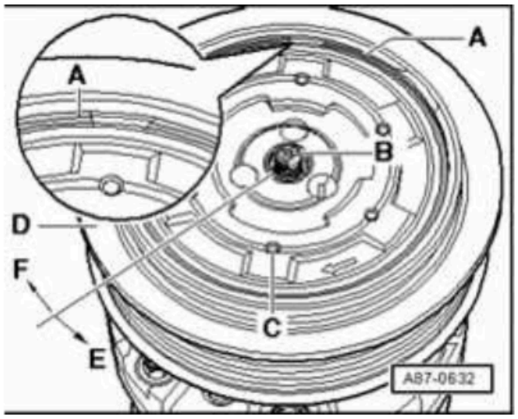

Fig. 87: Ribbed Belt Pulley - "Denso" A/C Compressor Remove/Install Components (1 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Replace securing ring - A -.**
- **Clean compressor flange before installing pulley.**
- **When installing securing ring - A - , take care not to bend it open more than necessary.**

- Install pulley - **B** -.

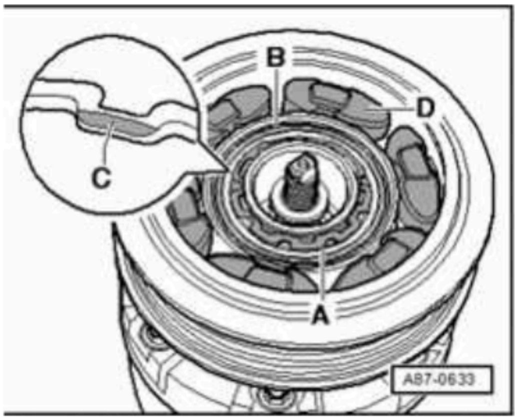

Fig. 88: Ribbed Belt Pulley - "Denso" A/C Compressor Remove/Install Components (2 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ensure correct insertion of securing ring - **A** -. Bevelled side - **C** - faces away from compressor (flat side faces compressor).
- Insert rubber elements - **D** - in pulley - **B** - as shown.
- When installing drive plate, moisten rubber elements - **D** - slightly with mounting paste or soap solution for example to provide lubrication.
- Insert drive plate - **C** - in rubber elements - **D** - until it makes contact with shaft of compressor - **B** -.

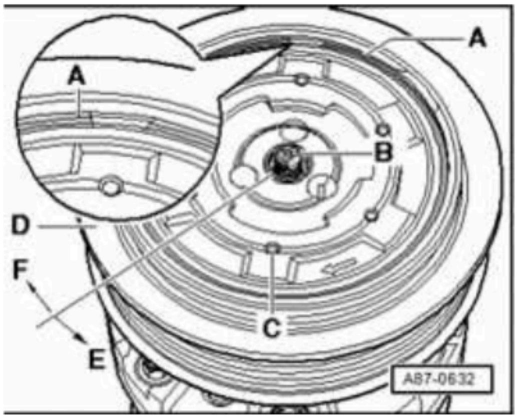

Fig. 89: Ribbed Belt Pulley - "Denso" A/C Compressor Remove/Install Components (1 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thread drive plate - **C** - onto compressor shaft - **B** - by turning it in direction of arrow - **F** -.
- Tighten drive plate - **C** - to 35 Nm by turning it with a commercially available band wrench (with webbed band) in direction of arrow -E-. Provide support for compressor shaft - **B** - by applying counterhold (e.g. socket wrench T10001/10 from wrench set) to compressor shaft - **B** -.
- Fit securing ring - **A** -.

Compressor drive unit, checking, replacing

- Replacement involves removing compressor --> **Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine)**.

NOTE:

- **If drive plate overload safeguard has been triggered, check freedom of movement of compressor before replacing drive unit. Replace entire compressor if it is stiff.**

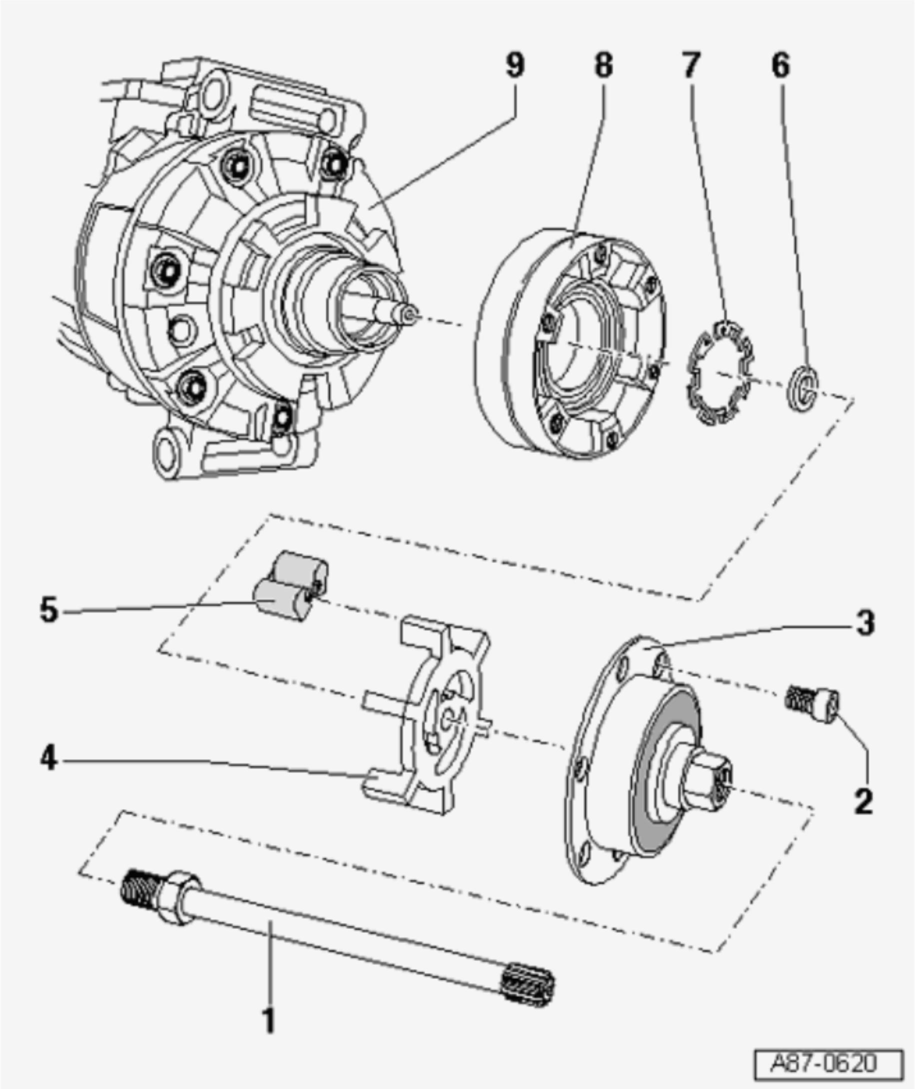

Fig. 90: Compressor Drive Unit, Checking, Replacing Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Compressor drive shaft

- Check; after tightening threaded connection, drive shaft must engage snugly in splines of drive pinion --> **Compressor drive shaft, removing and installing**
- Tightening torque 60 Nm
- Loosening and tightening --> **Compressor drive shaft, loosening and tightening**
- Removing and installing --> **Compressor drive shaft, removing and installing**

- Lubricate drive pinion splines with special grease G 000 100

2 - Socket-head bolt

- Tightening torque 10 Nm

3 - Drive plate

- With overload safeguard, triggered in the event of excessive torque (e.g. stiff compressor) and drive shaft just free-wheels without driving compressor
- Checking run-out and adjusting --> **Run-out of drive plate with overload protection, checking and adjusting**
- Removing and installing --> **Drive plate with overload protection, removing and installing**

4 - Drive plate

- Threaded to compressor drive shaft
- With overload safeguard, triggered in the event of excessive torque (e.g. stiff compressor) and drive shaft just free-wheels without driving compressor
- Tightening torque 30 Nm
- Removing and installing --> **Drive plate to compressor, removing and installing**

5 - Rubber element

- Isolates drive unit, damps vibration and sound
- When installing, moisten rubber elements slightly with soap solution for example to provide lubrication
- Removing and installing --> **Drive plate to compressor, removing and installing**

6 - Spacing disc

- Genuine spacer must be installed
- Dimensions: 17.5 x 10 x 3 mm

7 - Securing ring

- Replace
- Ensure correct positioning (flat side facing compressor)
- Removing and installing --> **Drive plate with roller bearing, removing and installing**

8 - Drive plate

- With rolling bearing
- Removing and installing --> **Drive plate with roller bearing, removing and installing**

- Clean compressor flange before installing drive plate

9 - Compressor

- Different models may be installed depending on engine and country version

Compressor drive shaft, loosening and tightening

NOTE:

- **Extensive preparation is required before compressor drive shaft can be removed --> Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine) (removing compressor).**
- **Drive shaft can also be checked and tightened without opening refrigerant circuit.**

Drive shaft, loosening

- Remove components preventing access to drive shaft --> **Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine)** (removing compressor).

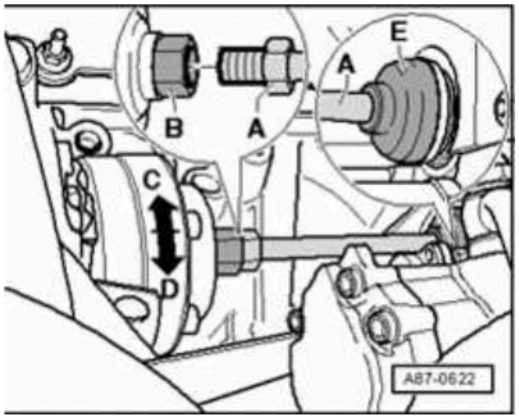

Fig. 91: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use open-ended wrench to hold compressor drive shaft - **A** - in position and turn compressor drive unit - **B** - in direction of arrow - **C** -.

NOTE:

- **Drive shaft - A - must not be turned.**
- **After loosening threaded connection, drive shaft - A - can be pushed through socket - E - into drive pinion.**
- **After installing drive shaft - A - , check installation position of boot - E -.**

Drive shaft, tightening

- Use open-ended wrench to hold compressor drive shaft - **A** - in position and turn compressor drive unit - **B** - in direction of arrow - **D** - (tightening torque 60 Nm).
- After tightening compressor drive shaft, check installation position of socket - **E** -.

Compressor drive shaft, removing and installing

Removing

- Remove compressor --> **Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine)**.

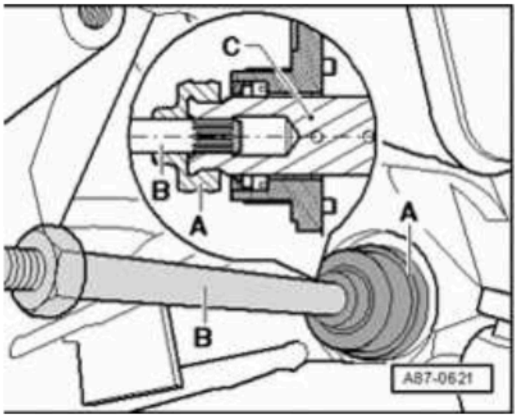

Fig. 92: Removing/Installing Boot & Pulling Drive Shaft Out/In Of Splines Of Drive Pinion
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove boot - **A** -.
- Pull drive shaft - **B** - out of splines of drive pinion - **C** -.

Installing

Install in reverse order, paying attention to the following:

- Check drive shaft - **B** -. Splines must not show signs of wear and must engage snugly in splines of drive pinion - **C** -.
- Before installing, coat splines of drive shaft - **B** - with special grease G 000 100.

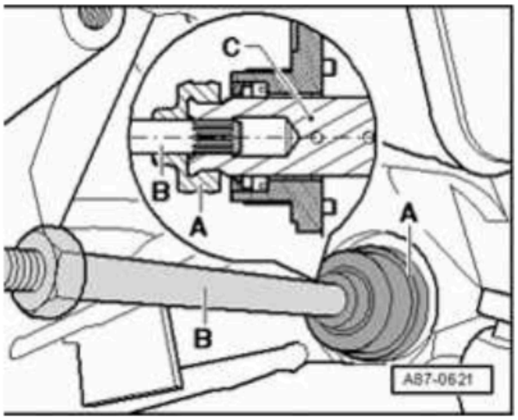

Fig. 93: Removing/Installing Boot & Pulling Drive Shaft Out/In Of Splines Of Drive Pinion
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Before installing compressor, insert drive shaft - **B** - and slide it home in drive pinion - **C** -.
- After installing compressor, check installation position of socket - **A** -.

Drive plate with overload protection, removing and installing

- Remove compressor --> **Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine)**.

Removing

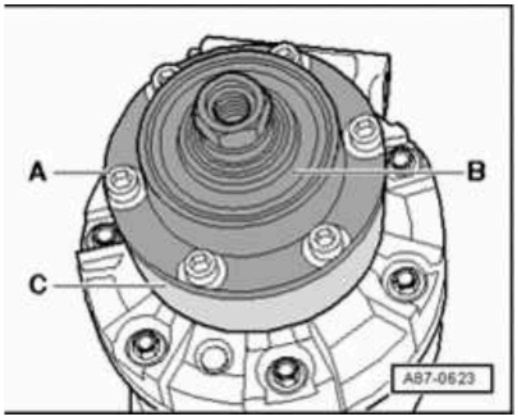

Fig. 94: Removing Bolts & Using Commercially Available Band Wrench (With Webbed Band) To Provide Support At Drive Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** -.

NOTE:

- **Use commercially available band wrench (with webbed band) to provide support at drive plate - C -.**

Installing

- Install drive plate with overload safeguard - **B** - to drive plate - **C** -.
- Insert and hand-tighten bolts - **A** -.
- Check run-out of drive plate - **B** - --> **Run-out of drive plate with overload protection, checking and adjusting**.
- Tighten bolts - **A** - (tightening torque 10 Nm).
- Check run-out of drive plate - **B** - again --> **Run-out of drive plate with overload protection, checking and adjusting**.

Run-out of drive plate with overload protection, checking and adjusting

- Remove compressor --> **Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine)**.

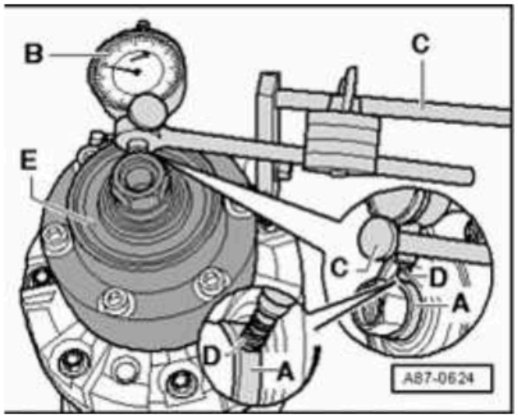

Fig. 95: Run-Out Of Drive Plate With Overload Protection, Checking/Adjusting
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Clean flange at drive plate - **A** -.
- Install dial gauge - **B** - with dial gauge bracket - **C** - (e.g. special tool, bracket 387) to compressor.
- Install measuring leads 1 2 of dial gauge - **D** - to flange of drive plate - **A** - with a pre-tension of approx. 1.0 mm.
- Give compressor drive unit - **E** - several turns.

Specified value: Run-out deviation less than 0.21 mm (run-out of dial indicator, difference between lowest and highest measured value max. 0.2 mm)

- If run-out deviation exceeds 0.2 mm, loosen bolts at drive plate --> **Drive plate with overload protection, removing and installing** and readjust drive plate.

Drive plate to compressor, removing and installing

- Remove drive plate with overload safeguard --> **Drive plate with overload protection, removing and installing**.

Removing

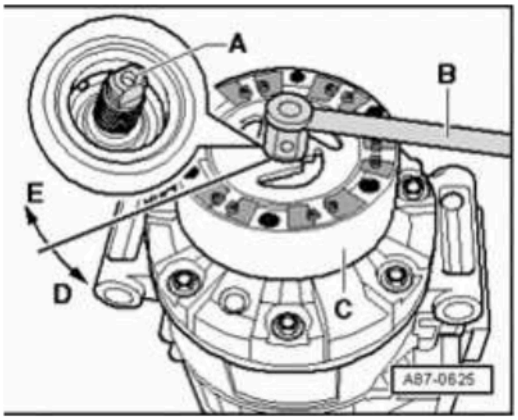

Fig. 96: Loosening Drive Plate & Providing Support For Compressor Shaft By Applying Counterhold To Compressor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen drive plate - **C** - by turning it with a commercially available band wrench (with webbed band) in direction of arrow - **D** -. Provide support for compressor shaft - **A** - by applying counterhold - **B** - (e.g. socket wrench T10001/10 from wrench set or special tool 3079) to compressor shaft - **A** -.

NOTE:

- **There are different types of compressor drive shaft. The drive shafts installed at the start of production cannot be supported using an Allen key (use socket wrench T10001/10 for example). Use was later made of compressors with a hexagon end on the drive shaft.**

Installing

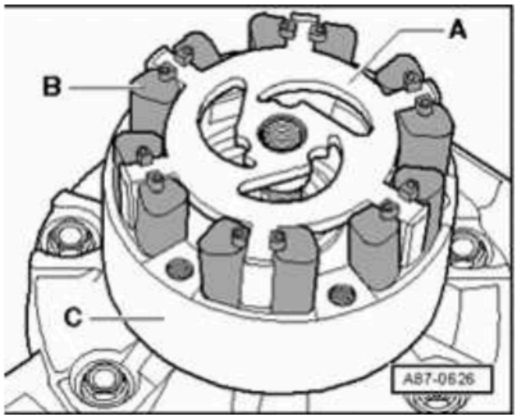

Fig. 97: Identifying Rubber Elements & Drive Plates
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- When installing, moisten rubber elements - **B** - slightly with soap solution for example to provide lubrication.
- Insert rubber elements - **B** - in drive plate - **A** - as shown.
- Insert drive plate - **A** - with rubber elements - **B** - in drive plate - **C** - as shown until it makes contact with compressor shaft.

NOTE:

- **Shows rubber elements - B - of type "1". Rubber elements - B - of type "2" are connected at top.**

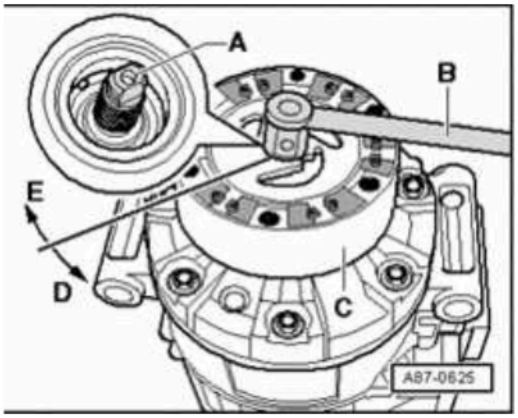

Fig. 98: Loosening/Threading Drive Plate & Providing Support For Compressor Shaft By Applying Counterhold To Compressor Shaft
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Thread drive plate - **C** - onto compressor shaft - **A** - by turning it in direction of arrow - **E** -.
- Tighten drive plate - **C** - to 30 Nm by turning it with a commercially available band wrench (with webbed band) in direction of arrow - **E** -. Provide support for compressor shaft - **A** - by applying counterhold - **B** - (e.g. socket wrench T10001/10 from wrench set) to compressor shaft - **A** -.

Drive plate with roller bearing, removing and installing

- Remove drive plate from compressor shaft --> **Drive plate to compressor, removing and installing**.

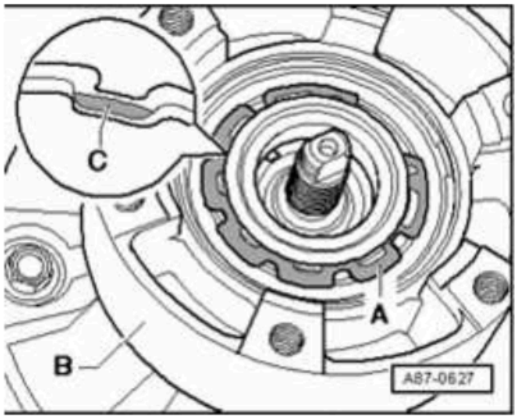

Fig. 99: Identifying Securing Ring, Drive Plate & Bevelled Side
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove securing ring - **A** -.
- Remove drive plate - **B** -.

NOTE:

- **Replace securing ring - A -.**
- **Clean compressor flange before installing drive plate.**
- **When installing securing ring - A - , take care not to bend it open more than necessary.**
- **Ensure correct insertion of securing ring - A -. Bevelled side - C - faces away from compressor (flat side faces compressor).**

A/C SYSTEM CONTROL AND REGULATION COMPONENTS

A/C system control and regulation components

- For servicing work on refrigerant circuit, refer to --> **A/C refrigerant system, servicing**.
- Perform the following on completion of repair work:

  - Check DTC memory --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)**
  - Erase DTC memory if necessary --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)**
  - Perform basic setting --> **Basic Setting (function 04)**

NOTE:

- **Electrical checks are provided for all components marked $^{1)}$.**
- **All components marked $^{2)}$ are activated in the Output Diagnostic Test Mode (DTM) diagnosis function --> Output Diagnostic Test Mode (DTM) (function 03).**
- **The windshield vent (defrost) can be replaced without removing the instrument panel. -->**
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM for BODY INTERIOR - CABRIOLET**
- **Up to Model Year 2003, an adhesive label containing information on the air conditioner was affixed in the engine compartment. The adhesive label was gradually discontinued in Model Year 2003. For refrigerant R134a capacity and notes on refrigerant, refer to --> 87 - AIR CONDITIONING .**

Components in engine compartment and rear of vehicle

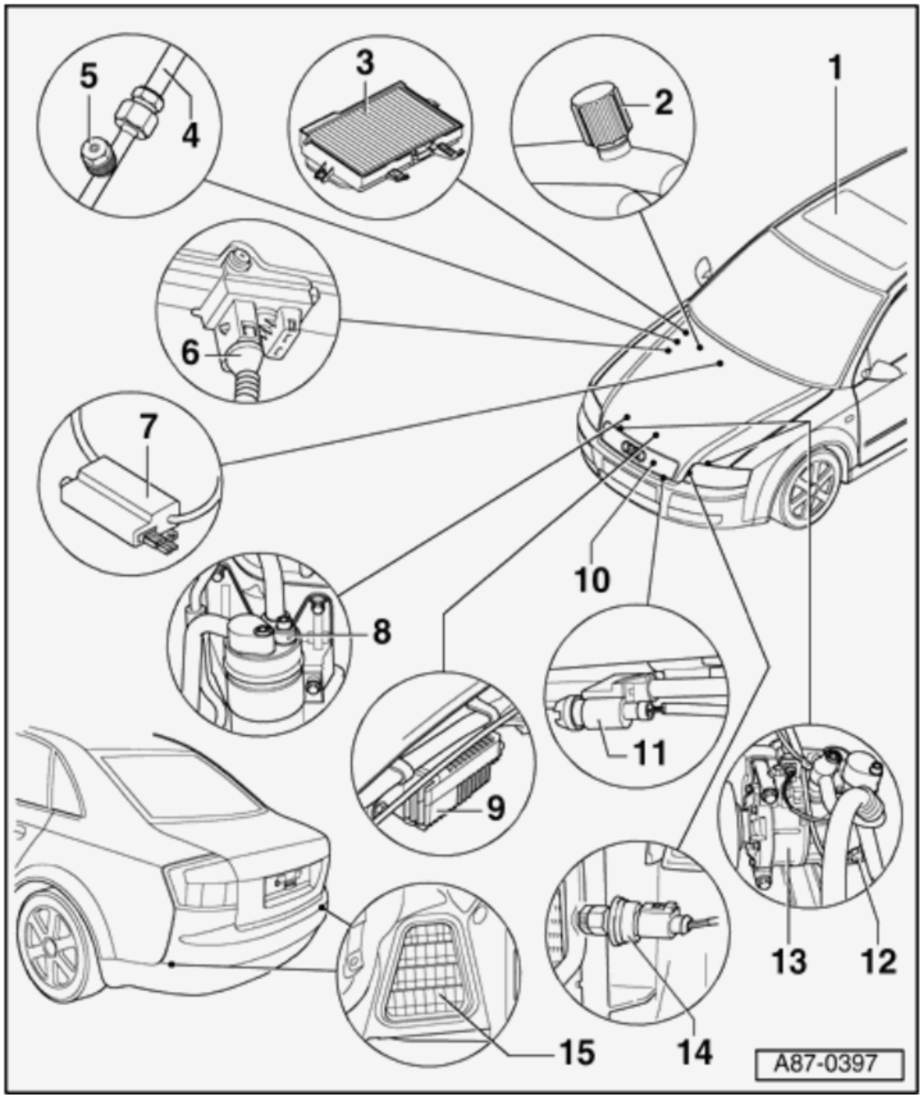

Fig. 100: Components In Engine Compartment And Rear Of Vehicle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Sun roof with solar cells

- Checking function --> **Solar sunroof, electrical testing**
- Removing and installing --> **60 SUNROOF**

2 - Service connection

- Low pressure side
- For measuring, discharging and filling
- Closing cap with seal, reinstall after using service valve

3 - Dust and pollen filter

- Removing and installing --> **Dust and pollen filter element, removing and installing**
- Observe replacement intervals 8E
- Different versions (with and without active-carbon-filter element --> **Dust and pollen filter with active-carbon-filter element**)

4 - Threaded connection in refrigerant line (with restrictor)

- Refrigerant circuit must be drained before opening threaded connection --> **87 - AIR CONDITIONING**

5 - Service connection

- High pressure side
- For measuring, discharging and filling
- Closing cap with seal, reinstall after using service valve

6 - Air Quality Sensor G238

- Function --> **Air Quality Sensor G238**
- Checking --> **Air Quality Sensor G238 , checking**
- Removing and installing --> **Air Quality Sensor G238 , removing and installing**

7 - Heated Windshield Control Module J505

- Function --> **Heated Windshield Z2 , function**
- Disabling --> **Windshield defroster, disabling**
- Removing and installing Electrical Equipment and

8 - Accumulator

- Always discharge refrigerant circuit before removing --> **87 - AIR CONDITIONING**
- Removing and installing --> **Accumulator, removing and installing**

9 - Coolant Fan Control (FC)Control Module J293 **A/C system control and regulation components**

- Request for activation of Coolant Fan V7 is transmitted by operating and display module, Climatronic Control Module J255 by way of CAN-Bus system to relevant engine control module.
- Switches Coolant Fan V7 infinitely to desired output -->
  - **19 - ENGINE - COOLING SYSTEM** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **19 - ENGINE - COOLING SYSTEM** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **19 ENGINE - COOLING SYSTEM** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN

  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

  and "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

- Different versions are installed at different locations depending on vehicle equipment -->
  - **19 - ENGINE - COOLING SYSTEM** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **19 - ENGINE - COOLING SYSTEM** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **19 ENGINE - COOLING SYSTEM** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

  .

- Checking --> **Read Measuring Value Block (function 08)** (reading measuring value block, display group "014"), , "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

10 - Condenser

- Always discharge refrigerant circuit before removing --> **87 - AIR CONDITIONING**
- Removing and installing refrigerant lines --> **Refrigerant lines for condenser, removing and installing**
- Removing and installing condenser --> **Condenser, removing and installing**

11 - Outside Air Temperature Sensor G17

- **Removing**

- Disconnect connector at Outside Air Temperature Sensor G17 and remove from mount in air guide -->
  - **63 BUMPER**
  - **63 - BUMPERS** for BODY EXTERIOR - CABRIOLET

- Resistance values
- Measuring value of Outside Air Temperature Sensor G17 is evaluated by Instrument Cluster Control

Module J285 and transmitted via CAN-Bus comfort system to operating and display module, Climatronic Control Module J255 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

12 - A/C Compressor Regulator Valve N280 --> **A/C system control and regulation components**

- Checking activation and function

13 - Compressor

- Removing compressor from bracket/reinstalling --> **Compressor, removing and installing from bracket**
- Removing refrigerant line at compressor/installing --> **Refrigerant lines on compressor, removing and installing**
- Removing and mounting compressor --> **Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine)**
- Type of compressor differs depending on engine (installed to right or left of engine, 6-cyl. engine, 8-cyl. engine)

- Different types of compressor are installed depending on country version (e.g. "Denso" type designation "6 SEU" for Europe and "7 SEU" for hot countries)
- Removing and installing ribbed belt -->
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF
- Replacing belt pulley --> **Belt pulley/drive unit of compressor, replacing**
- Checking and replacing compressor drive unit --> **Compressor drive unit, checking, replacing**

CAUTION: Refrigerant circuit must be discharged before removing compressor.

14 - High Pressure Sensor G65 1)

- Function, removing and installing --> **High Pressure Sensor G65 , removing and installing**

- Measuring value of High Pressure Sensor G65 is displayed in measuring value block (display group "001") of operating and display module, Climatronic Control Module J255 and

15 - Air extractor

- Sealing lips of air extraction vent must move freely and close automatically
- To ensure proper functioning of passenger compartment ventilation, air guides must not be blocked by luggage compartment lining
- Checking --> **Air extraction vent, checking**

Dust and pollen filter element, removing and installing

NOTE:

- **Replacement interval for dust and pollen filter 8E**
- **There are various types of filter element (without and with activated charcoal layer as integrated odor filter).**
- **The filter is located on the right beneath the plenum chamber cover.**

- Remove plenum chamber cover.

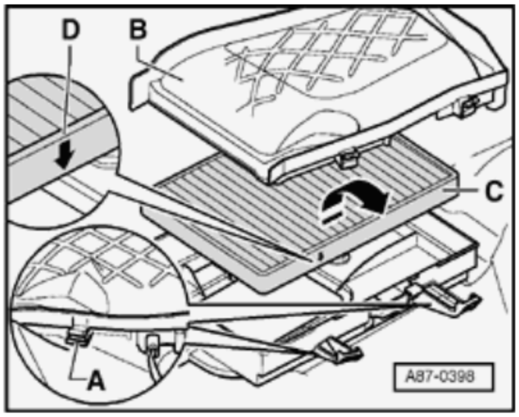

Fig. 101: Identifying Plenum Chamber Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unclip cover - **B** - and remove towards front
- Take dust and pollen filter - **C** - out of housing.

NOTE:

- **Pay attention to flow direction "arrow" - D - when inserting filter in filter frame.**
- **Pay attention to correct positioning of cover - B - on installation. It must be clipped in at both fasteners - A - as otherwise water will run onto the dust and pollen filter and into the air conditioner.**

Dust and pollen filter with active-carbon-filter element

- With the introduction of the Air Quality Sensor G238 (--> **Air Quality Sensor G238**), vehicles installed with an Air Quality Sensor G238 are provided with a dust and pollen filter with an additional active-carbon-filter element.
- While acting as a dust and pollen filter, the active-carbon-filter element is also designed to filter out gaseous pollutants such as ozone, benzene and nitrogen dioxide from the flow of air.
- The purpose of the activated charcoal is to absorb the gaseous pollutants in the air flow until the fresh-air flap has closed and the air conditioner is operating in recirculated-air mode. Switching from fresh-air to recirculated-air mode is implemented by the operating and display module, Climatronic Control Module J255 as soon as the Air Quality Sensor G238 detects gaseous pollutants in the ambient atmosphere ("automatic air recirculation" function must have been selected).
- The activated charcoal layer in the dust and pollen filter acts differently on the various pollutants in the air:

- Certain pollutants are permanently bonded in the activated charcoal layer.
- Others are converted into harmless compounds as in a catalytic converter.
- In all other respects, the activated charcoal acts like a condenser. As the impact level increases, pollutants are initially absorbed until a certain degree of saturation is attained. If the pollutant content decreases, the activated charcoal layer continuously emits the absorbed particles again.

- As the activated charcoal layer permanently bonds some of the pollutant particles, it is appropriate to renew the dust and pollen filter sooner than specified under the following usage conditions:

- Vehicle operation in areas with severe air pollution
- Vehicle operation with "Automatic air recirculation" function predominantly deactivated
- Vehicles with no Air Quality Sensor G238 as optional extra and thus No "Automatic air recirculation" function

- On vehicles with Air Quality Sensor G238 as optional extra, the air conditioner should be operated as far as possible in "automatic air recirculation" mode. Should it however be necessary or desirable to deactivate the function, attention must be paid to the following:

- Activated charcoal layer in dust and pollen filter becomes saturated after a certain length of time.
- A saturated filter can no longer absorb pollutants and allows them to pass unhindered.

- The main function of a dust and pollen filter and the Air Quality Sensor G238 is to prevent peak pollution levels entering the passenger compartment. The following must however be observed:

- If a vehicle is driven in an area with a relatively clean environment (with few gaseous pollutants in the air), the point at which switching from fresh to recirculated-air mode takes place is different to that in areas with a high basic impact level (e.g. industrial estates).
- Irrespective of the basic impact level, switching from fresh to recirculated-air mode always takes place if there is an increase in pollutant level (e.g. on driving through a cloud of diesel emissions from a truck).

- The active-carbon-filter can be installed on all vehicles (including vehicles with no Air Quality Sensor

G238 as optional extra). The same restrictions then however apply to these vehicles as when operating the air conditioner with the "Automatic air recirculation" function deactivated.

Air Quality Sensor G238 , removing and installing

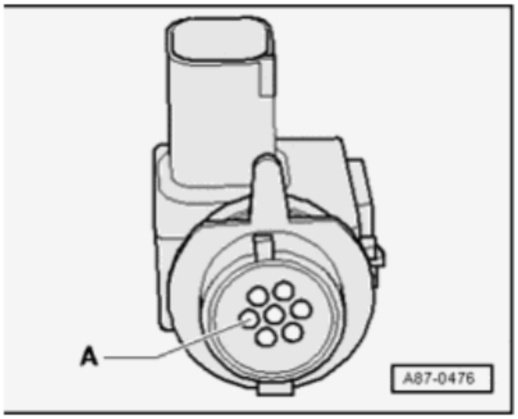

Fig. 102: Identifying Air Quality Sensor G238
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:	- **The Air Quality Sensor G238 is a highly sensitive electronic component which could be destroyed by direct exposure to solvents, fuels and certain chemical compounds (contamination can ingress by way of area - A - for example with version "2").** - **Never install an Air Quality Sensor G238 which has not been kept clean.** - **After removal, do not set down Air Quality Sensor G238 in areas where it could come into contact with solvents, fuels or certain chemical compounds (liquids or vapors).** - **There are different versions of the Air Quality Sensor G238. At the start of production, Air Quality Sensor G238 version "1" was installed. This sensor is gradually being replaced by version "2" , however the mode of operation is identical.**

Removing and installing

- Remove plenum chamber cover.

Version "1"

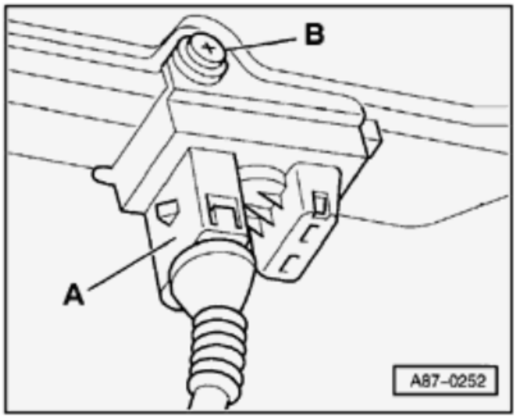

Fig. 103: Disconnecting Connector From Air Quality Sensor G238 & Removing Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** - from Air Quality Sensor G238.
- Remove bolt - **B** - and remove Air Quality Sensor G238.

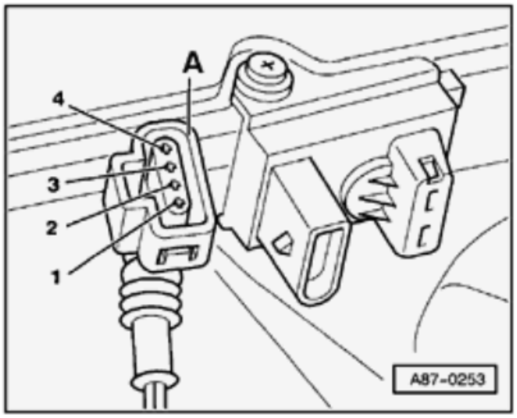

Fig. 104: Terminal Assignment In Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

Terminal assignment in connector - **A** -

1 - B+ (terminal "15")

2 - Negative (terminal "31")

3 - Signal wire to operating and display module, Climatronic Control Module J255 (square-wave signal cannot be measured)

4 - Not used

Version "2"

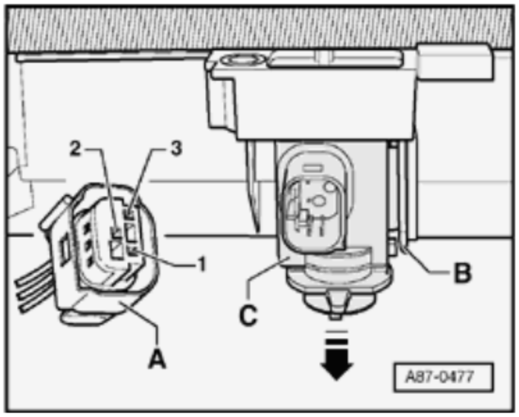

Fig. 105: Disconnecting Connector From Air Quality Sensor G238 & Releasing Catch And Sliding Air Quality Sensor G238 Downwards
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** - from Air Quality Sensor G238.
- Release catch - **B** - and slide Air Quality Sensor G238 - **C** - downwards.

Terminal assignment in connector - **A** -

1 - B+ (terminal "15")

2 - Negative (terminal "31")

3 - Signal wire to operating and display module, Climatronic Control Module J255 (square-wave signal cannot be measured)

Air extraction vent, checking

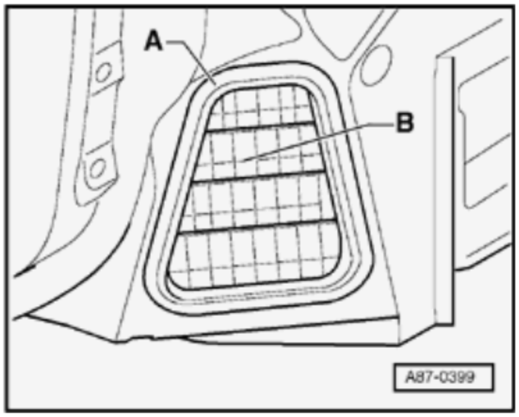

Fig. 106: Identifying Air Extraction Vents & Sealing Lips
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check air guides to both air extraction vents - **A** - for blockage (left and right).

- Sealing lips - **B** - in air extraction vent - **A** - must move freely and close automatically.

- Clogged air guides or gummed sealing lips could cause windows to mist up.

NOTE:

- **The illustration shows the air extraction vent for a Saloon with the rear bumper removed. A different type of air extraction vent is installed on the Avant.**
- **One air extraction vent each is installed on left and right for forced air extraction.**

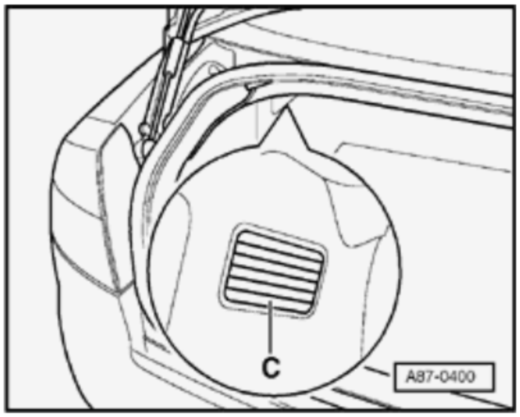

Fig. 107: Identifying Vent Openings In Luggage Compartment Lining
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **To ensure proper functioning of passenger compartment ventilation, the vent openings - C - in the luggage compartment lining are never to be sealed off.**

Components in passenger compartment

NOTE:

- **For a description of the various instrument panel vents, refer to --> Instrument panel vents and air guides.**
- **The following illustrations show a instrument panel of the type installed in a Saloon or Avant up to VIN 399999 in Model Year 2005. The shape of the instrument panel on a Cabrio or for a Saloon or Avant as of VIN 400000 in Model Year 2005 (for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN) differs slightly from these illustrations -->**
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM for BODY INTERIOR - CABRIOLET**

.

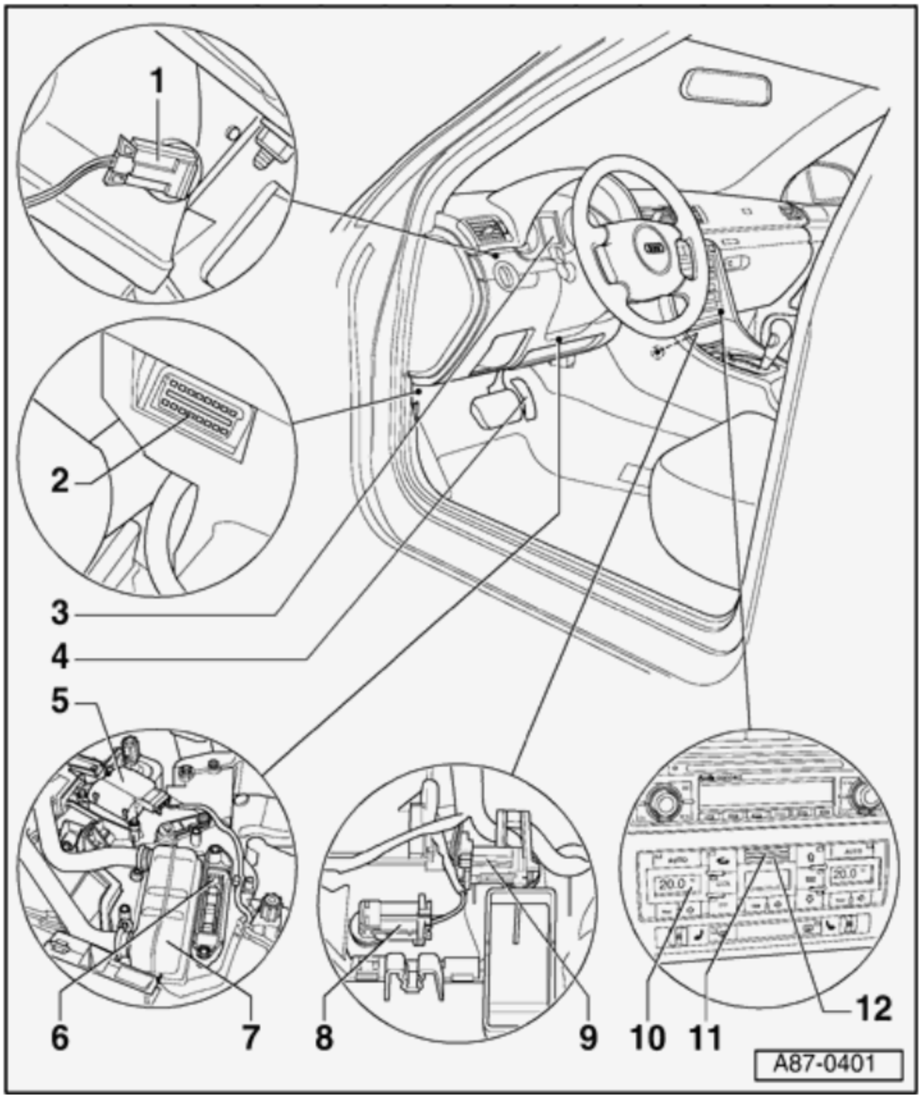

Fig. 108: A/C System Control And Regulation Components In Passenger Compartment (1 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Left Vent Temperature Sensor G150 --> **Left Vent Temperature Sensor G150 , removing and installing**

- Removing and installing --> **Left Vent Temperature Sensor G150 , removing and installing**

2 - Diagnostic socket

- Performing air conditioner On Board Diagnostic (OBD) --> **On Board Diagnostic (OBD), procedure**

3 - Instrument cluster

- With Instrument Cluster Control Module J285 and Outside Air Temperature Display G106 **A/C system control and regulation components**
- The ambient temperature output by the operating and display module, Climatronic Control Module J255

is only displayed for example on vehicles with automatic transmission if a gear is engaged

- Checking measured values of temperature sensors if temperature reading is incorrect
- Measuring value of Outside Air Temperature Sensor G17 is evaluated by Instrument Cluster Control Module J285 and transmitted via CAN-Bus comfort system to operating and display module, Climatronic Control Module J255 "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

4 - Accelerator pedal

- Kick-down deactivation of the A/C Compressor Regulator Valve N280 is effected via the relevant engine control module "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052

5 - Left Temperature Flap Motor V158 **A/C system control and regulation components**

- With Left Temperature Flap Potentiometer/Actuator G220
- Lever color code: Red
- Removing and installing --> **Left Temperature Flap Motor V158 , removing and installing**

6 - Auxiliary Air Heater Heating Element Z35 **A/C system control and regulation components**

- Not applicable in the USA

7 - Heating core

- Removing and installing --> **Heating core, removing and installing**

8 - Left Footwell Vent Temperature Sensor G261

- Removing and installing --> **Left Footwell Vent Temperature Sensor G261 , removing and installing**

9 - Right Footwell Vent Temperature Sensor G262

- Removing and installing --> **Right Footwell Vent Temperature Sensor G262 , removing and installing**

10 - Operating and display unit, Climatronic Control Module J255

- Different versions, assignment
- Removing and installing --> **Climatronic Control Module J255 , removing and installing** and --> **Climatronic Control Module J255 , removing and installing**
- The Interior Temperature Sensor Fan V42 and the Instrument Panel Interior Temperature Sensor G56 are integrated into the operating and display module, Climatronic Control Module J255
- Observe additional notes --> **Climatronic Control Module J255 , removing and installing**

- Checking code and coding --> **Climatronic Control Module J255, coding (function 07)**
- Display fields and buttons are illuminated by LEDs which cannot be replaced
- Depending on the date of issue, the operating and display module, Climatronic Control Module J255 may also be referred to as A/C Control Head E87 in various workshop publications (e.g. in wiring diagrams for vehicles up to Model Year 2004).

11 - Interior Temperature Sensor Fan V42 **A/C system control and regulation components**

- Installed in operating and display module, Climatronic Control Module J255 , cannot be replaced separately

12 - Instrument Panel Interior Temperature Sensor G56

- Installed in operating and display module, Climatronic Control Module J255 , cannot be replaced separately

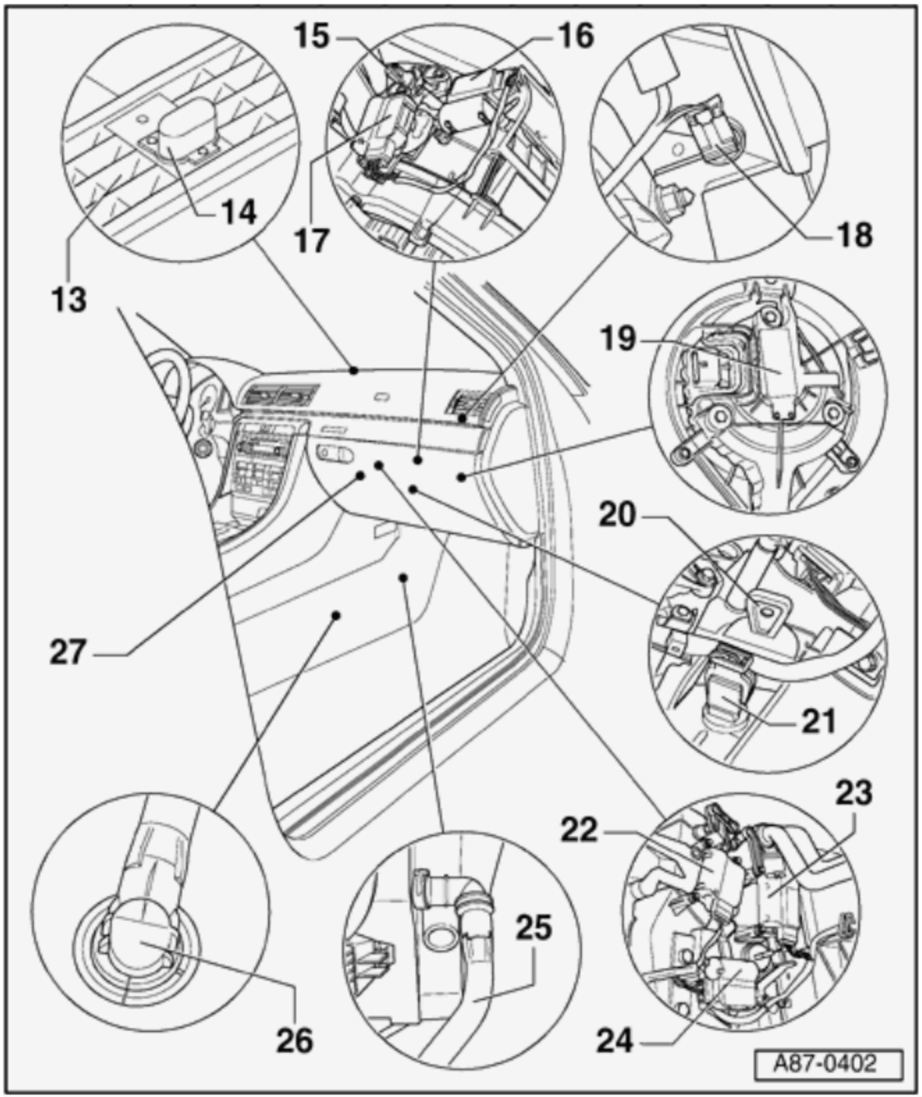

Fig. 109: A/C System Control And Regulation Components In Passenger Compartment (2 Of 2)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

13 - Defroster outlet vent

- For windshield
- Removing and installing -->
    - **70 - INTERIOR TRIM**
    - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

14 - Sunlight Photo Sensor G107

- Removing and installing --> **Sunlight Photo Sensor G107 , removing and installing**
- Different versions for vehicles up to VIN 399999 and as of VIN 400000 in Model Year 2005 (for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN) ; observe exact assignment --> **Sunlight Photo Sensor G107 , removing and installing**

15 - Fresh Air Intake Duct Temperature Sensor G89

- Checking
- Removing and installing --> **Fresh Air Intake Duct Temperature Sensor G89 , removing and installing**

16 - Recirculation Flap Motor V113 **A/C system control and regulation components**

- With Recirculation Flap Motor Position Sensor G143
- Lever color code: Blue
- Removing and installing --> **Recirculation Flap Motor V113 , removing and installing**

17 - Air Flow Flap Motor V71 **A/C system control and regulation components**

- This motor activates fresh-air and air flow flaps
- Only installed on left-hand drive vehicles
- With Back Pressure Flap Motor Position Sensor G113
- Cam plate color code: Light blue

- Removing and installing --> **Defroster Flap Motor V107 , removing and installing**

18 - Right Vent Temperature Sensor G151

- Removing and installing --> **Right Vent Temperature Sensor G151 , removing and installing**

19 - Fresh Air Blower Control Module J126 and Fresh Air Blower V2 **A/C system control and regulation components**

- Removing and installing --> **Fresh Air Blower Control Module J126 and Fresh Air Blower V2 , removing and installing**
- The Fresh Air Blower V2 contains the Fresh Air Blower Control Module J126 as an integral component which cannot be replaced separately.

20 - Connection for air guide for cooling the glove compartment

- Vehicles without glove compartment cooling are installed with a plug (.).
- For glove compartment cooling components, refer to -->
    - **68 - INTERIOR EQUIPMENT**
    - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET
- Removing and installing --> **Air guide connection for glove compartment cooling, removing and installing**

21 - Evaporator Vent Temperature Sensor G263

- Removing and installing --> **Evaporator Vent Temperature Sensor G263 , removing and installing**

NOTE:

- **The evaporator may ice up if the Evaporator Vent Temperature Sensor G263 is not properly installed in the air conditioner air flow.**

22 - Central Air Flap Motor V70 **A/C system control and regulation components**

- With Central Flap Motor Position Sensor G112
- Cam plate color code: White (black for right-hand drive vehicles)
- Removing and installing --> **Central Air Flap Motor V70 , removing and installing**

23 - Defroster Flap Motor V107 **A/C system control and regulation components**

- With Defroster Flap Motor Position Sensor G135
- Lever color code: Dark green (light green for right-hand drive vehicles)
- Removing and installing --> **Defroster Flap Motor V107 , removing and installing**

24 - Right Temperature Flap Motor V159 **A/C system control and regulation components**

- With Right Temperature Flap Potentiometer/Actuator G221
- Lever color code: dark purple (brown for right-hand drive vehicles)
- Removing and installing --> **Right Temperature Flap Motor V159 , removing and installing**

25 - Evaporator housing

- Checking --> **Evaporator housing drain, checking**
- Removing and installing --> **Evaporator housing drain, removing and installing**

NOTE:

- **Incomplete evaporator drainage may result in an odor nuisance.**

26 - Evaporator housing valve

- Checking --> **Evaporator housing drain, checking**
- Removing and installing --> **Evaporator housing drain, removing and installing**

27 - Air conditioner with evaporator

- Removing and installing --> **Heating and A/C unit, removing and installing**
- Disassembling and assembling --> **Heating and A/C unit, component overview**
- Always discharge refrigerant circuit before removing --> **87 - AIR CONDITIONING**

Climatronic Control Module J255 , removing and installing

NOTE:

- **Depending on the date of issue, the operating and display module, Climatronic Control Module J255 may also be referred to as A/C Control Head E87 in various workshop publications (e.g. in wiring diagrams for vehicles up to Model Year 2004).**

- Removing and installing operating and display module, Climatronic Control Module J255.

There are different versions of the operating and display module, Climatronic Control Module J255 , the part number index must therefore be observed

- With and without radio navigation system (or radio with large control panel)
- With and without switch for seat heating
- With Off button or with "Automatic air recirculation" button (vehicles with Air Quality Sensor G238
- Vehicles as of Model Year 2003 are only to be installed with operating and display modules, Climatronic Control Module J255 with part number index "H" onwards.

- Vehicles with 4-cyl. engine and gasoline direct injection (FSI) are only to be installed with operating and display modules, Climatronic Control Module J255 with part number index "H" onwards.
- Vehicles up to VIN "399999" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN) are not to be installed with operating and display modules, Climatronic Control Module J255 with part number index "AJ" onwards.
- Vehicles as of VIN "400000" in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 with no prior specification of any particular VIN) are only to be installed with operating and display modules, Climatronic Control Module J255 with part number index "AJ" onwards.

NOTE:

- **When replacing operating and display module, Climatronic Control Module J255 , attention must be paid to exact assignment .**
- **After installing an operating and display module, Climatronic Control**

Module J255 , perform air conditioner basic setting in the specified manner --> Basic Setting (function 04).

- **If a new operating and display module, Climatronic Control Module J255 has been installed and basic setting not performed, the A/C Compressor Regulator Valve N280 is not activated and shutoff condition "6" appears in measuring value block "2" when performing air conditioner On Board Diagnostic (OBD).**
- **The functions selected are indicated by lighting of LEDs in the various operating and display module, Climatronic Control Module J255 buttons.**
- **With this version of the operating and display module, Climatronic Control Module J255 , the Instrument Panel Interior Temperature Sensor G56 , the Interior Temperature Sensor Fan V42 and the Heated Rear Window switch (including potentiometers for heated seats) are integrated and cannot be replaced separately.**
- **After replacement of the operating and display module, Climatronic Control Module J255 :**
- **- Always code operating and display module, Climatronic Control Module J255 --> Climatronic Control Module J255, coding (function 07).**
- **- Always perform basic setting --> Basic Setting (function 04).**
- **- Always check DTC memory --> Diagnostic Trouble Code (DTC) Memory, checking (function 02).**
- **On this vehicle, the basic settings (e.g. country version, left-hand drive or right-hand drive) of the operating and display module, Climatronic Control Module J255 are coded by the Instrument Cluster Control Module J285. The data are transmitted via the CAN-Bus comfort system to the operating and display module, Climatronic Control Module J255. The currently valid code is displayed in the measuring value block --> Read Measuring Value Block (function 08). The direct entry of a code in the operating and display module, Climatronic Control Module J255 is provided for certain items of equipment (e.g. Heated Windshield or sunroof with solar cells) "Guided Fault-Finding" Vehicle Diagnosis, Testing Info. System VAS5051B or Vehicle Diagnosis Service Syst. VAS5052.**
- **The unit (°C or °F) for the temperature display of the operating and display module, Climatronic Control Module J255 is transmitted by the Instrument Cluster Control Module J285 and is determined by the code entered in this.**
- **The module used for the display can be switched by simultaneously pressing the "Air recirculation mode" and "Temperature +" buttons for the left side for more than 2 seconds.**
- **The operating and display module, Climatronic Control Module J255 then transmits the ambient temperature with the altered unit to the Instrument Cluster Control Module J285. The Instrument Cluster Control Module J285 adopts this change. The same unit is used for the display in the operating and display module, Climatronic Control Module J255 and the ambient temperature display in the instrument cluster.**

- **Switching of the unit used for the display in the operating and display module, Climatronic Control Module J255 applies to all ignition keys.**
- **As of April 2002, operating and display modules, Climatronic Control Module J255 with part number index "H" onwards (with hardware/software version as of "XX15") have gradually been installed. With these operating and display modules, Climatronic Control Module J255 the passenger compartment temperature regulation is designed to be somewhat cooler.**
- **As of Model Year 2003, operating and display modules, Climatronic Control Module J255 with part number index "H" onwards (with hardware/software version as of "XX16") have gradually been installed. These operating and display modules, Climatronic Control Module J255 differ as follows from the model with software version "XX15" :**
- **- Modified passenger compartment temperature regulation for Audi Cabrio and open convertible top (designed to be somewhat cooler)**
- **- Extended temperature adjustment range; 16 °C (instead of 18 °C) is now the lowest temperature which can be set**
- **- With the Audi Cabrio, different settings are stored for closed and open convertible top in the operating and display module, Climatronic Control Module J255. On opening and closing the convertible top, the operating and display module, Climatronic Control Module J255 then automatically alters the setting to the value last set with convertible top closed or open.**
- **If the operating and display module, Climatronic Control Module J255 displays a number, check the DTC memory of the operating and display module, Climatronic Control Module J255 (the number "60" for example indicates a fault at the Interior Temperature Sensor Fan V42). If the display of the operating and display module, Climatronic Control Module J255 flashes and No fault is displayed in the DTC memory (e.g. with display "09"), there is a malfunction in the electronics of the operating and display module, Climatronic Control Module J255.**

Climatronic Control Module J255 , removing and installing

Removing

- Removal on vehicles with no radio navigation system or radio with large control panel

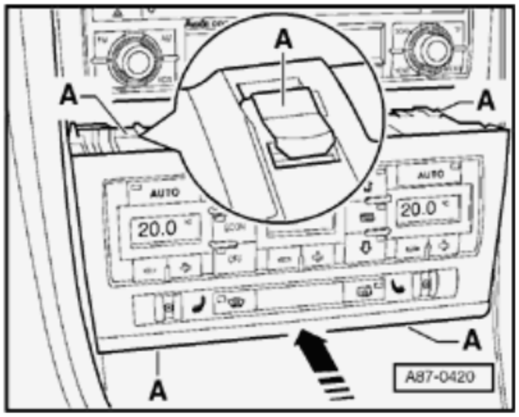

Fig. 110: Climatronic Control Module J255 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Reach from underneath into center console and release operating and display module, Climatronic Control Module J255 from center console.

NOTE:

- **If operating and display module, Climatronic Control Module J255 cannot be removed, proceed as for vehicles with radio navigation system.**
- **Removal on vehicles with radio navigation system or radio with large control panel**

- Remove radio or radio navigation system -->
    - **91 - COMMUNICATION**
    - **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER** for COMMUNICATION, CABRIOLET

.

- Reach through this opening and slide operating and display module, Climatronic Control Module J255 to rear out of center console.

NOTE:

- **The operating and display module, Climatronic Control Module J255 is held in position in the center console by way of 4 clips - A -.**
- **In the event of incorrect Instrument Panel Interior Temperature Sensor G56 measurements, check intake grille of operating and display module, Climatronic Control Module J255 trim panel (must not be closed off) as well as operation of Interior Temperature Sensor Fan V42.**
- **On replacing operating and display module, Climatronic Control Module J255 , pay attention to precise assignment (e.g. without or with heated seat switch) .**

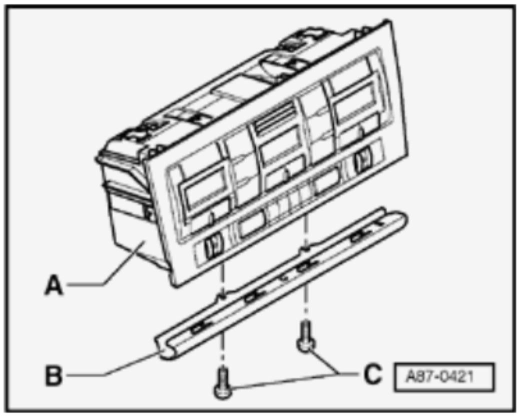

Fig. 111: Identifying Radio Navigation System, Trim Panel & Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **Operating and display units, Climatronic Control Module J255 for vehicles with no radio navigation system - A - are additionally provided with a trim panel - B - with 2 bolts - C -.**

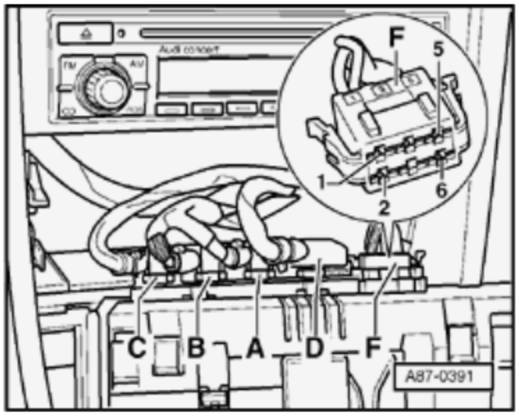

Fig. 112: Disconnecting Connectors From Operating And Display Module, Climatronic Control Module J255
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Release connectors - **A** - to - **D** - and - **F** - by pressing retainer tabs and disconnect connectors.
- Remove bolts - **C** - , slide trim panel - **B** - to right and remove it from operating and display module, Climatronic Control Module J255 - **A** -.
- Install in reverse order.

Air guide connection for glove compartment cooling, removing and installing

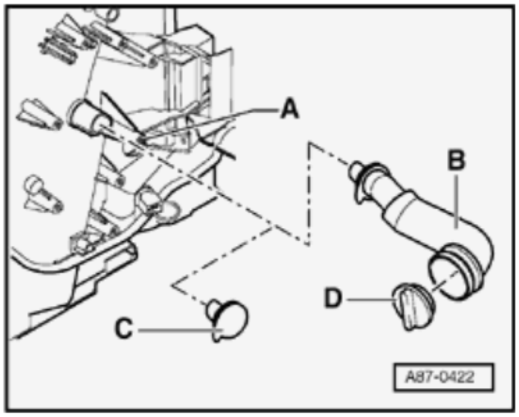

Fig. 113: Identifying Hole, Air Guide, Plug & Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **The air conditioner is provided with a hole - A - for connecting an air guide - B - to the glove compartment. This air guide is used to route cooled air into the glove compartment.**
- **On vehicles without glove compartment cooling, the hole - A - is sealed with a plug - C -.**

- Remove vent - **D** - (screwed to air guide - **B** -).
- Remove glove compartment -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Give the air guide - **B** - roughly a quarter anti-clockwise turn and remove it from the air conditioner.

Fresh Air Blower Control Module J126 and Fresh Air Blower V2 , removing and installing

Removing

- Remove glove compartment -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .

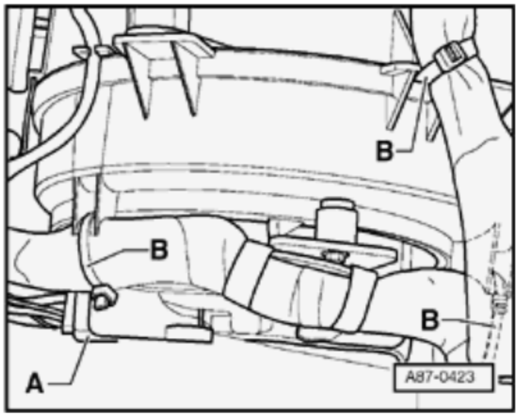

Fig. 114: Disconnecting Connector & Loosening Cable Ties
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** -.
- Remove lower "A-pillar" trim -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Loosen cable ties - **B** -.

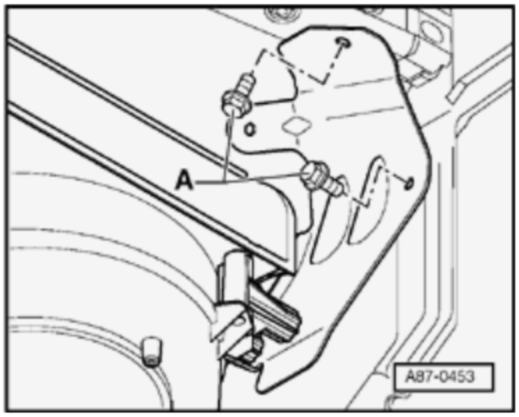

Fig. 115: Removing Air Conditioner Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** -.
- Pull air conditioner slightly to rear.
- Carefully fold back floor covering.

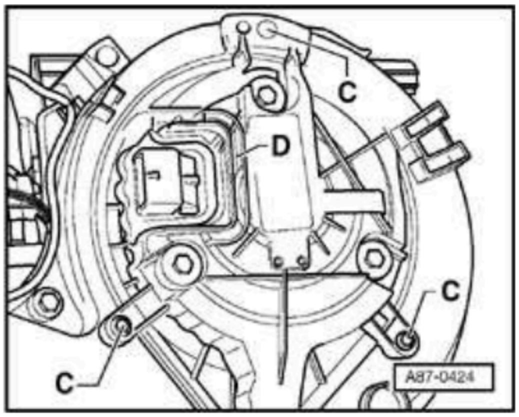

Fig. 116: Identifying Fresh Air Blower V2 & Rear Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Press noise insulation mat aside until rear bolt - **C** - is accessible.
- Remove bolts - **C** -.
- Push noise insulation mat aside and pull Fresh Air Blower V2 - **D** - out of air conditioner.

NOTE:

- **The Fresh Air Blower V2 contains the Fresh Air Blower Control Module J126 as an integral component which cannot be replaced separately.**
- **When installing, pay attention to correct positioning of Fresh Air Blower V2 in air conditioner.**

Installing

Install in reverse order.

Left Vent Temperature Sensor G150 , removing and installing

- Remove "A" -pillar trim on drivers side. -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

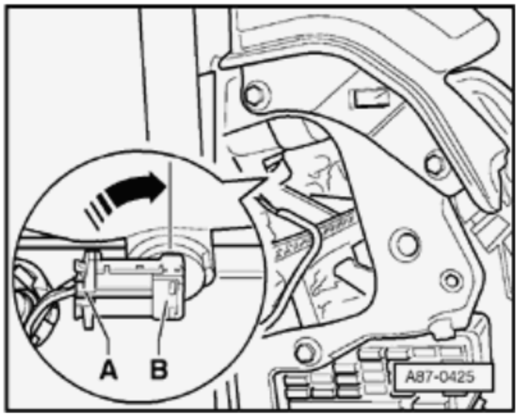

Fig. 117: Turning Sensor And Disconnecting Connector
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Turn sensor - **B** - through 90° and pull it out of air guide channel.
- Disconnect connector - **A** -.

Right Vent Temperature Sensor G151 , removing and installing

- Remove "A" -pillar trim on passengers side (if sensor cannot be removed, take out glove compartment as well). -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

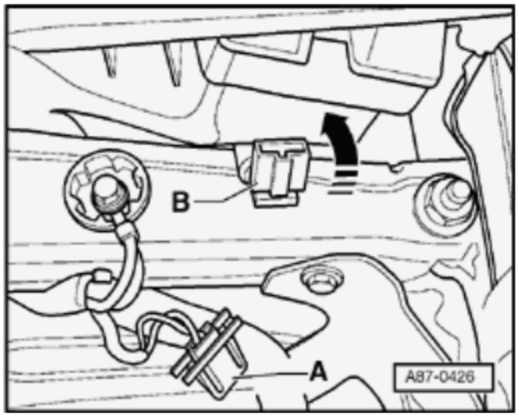

Fig. 118: Right Vent Temperature Sensor G151 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** -.
- Turn sensor - **B** - through 90° and pull it out of air guide.

Evaporator Vent Temperature Sensor G263 , removing and installing

- Remove glove compartment -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

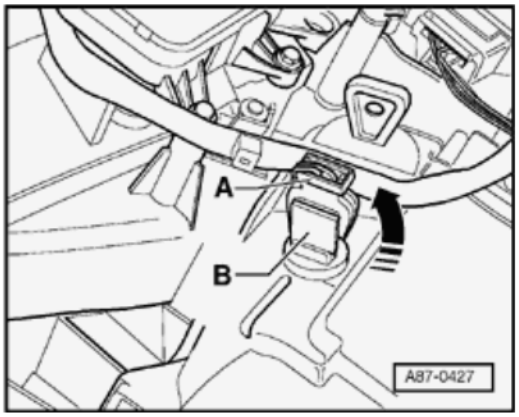

Fig. 119: Evaporator Vent Temperature Sensor G263 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** -.
- Turn sensor - **B** - through 90° and pull it out of air conditioner.

NOTE:

- **The evaporator may ice up if the Evaporator Vent Temperature Sensor G263 is not properly installed in the air conditioner air flow.**

Left Footwell Vent Temperature Sensor G261 , removing and installing

- Remove operating and display module, Climatronic Control Module J255.

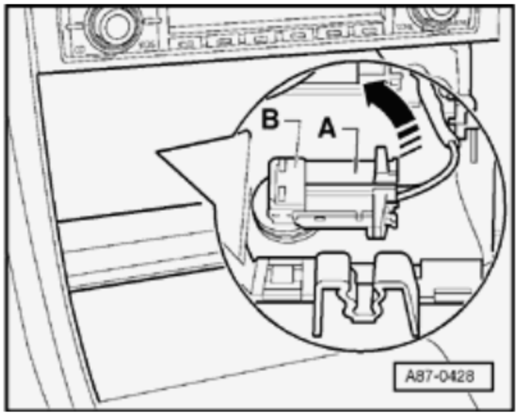

Fig. 120: Left Footwell Vent Temperature Sensor G261 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Reach through opening for operating and display module, Climatronic Control Module J255 and disconnect connector - **A** -.
- Give Left Footwell Vent Temperature Sensor G261 - **B** - approx. 90° turn in direction of arrow.
- Pull Left Footwell Vent Temperature Sensor G261 out of air conditioner.

NOTE:

- **observe arrangement of connectors to both sensors (Left Footwell Vent**

Temperature Sensor G261 and Right Footwell Vent Temperature Sensor G262 to avoid interchange).

Right Footwell Vent Temperature Sensor G262 , removing and installing

- Remove operating and display module, Climatronic Control Module J255.

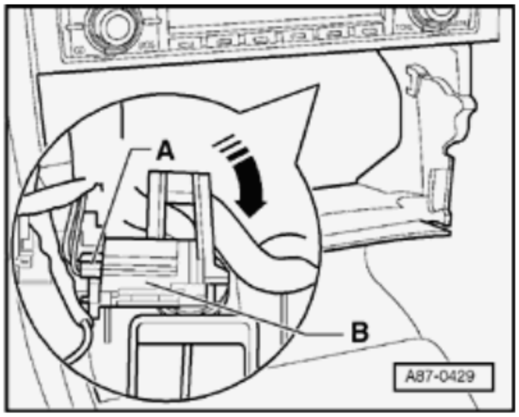

Fig. 121: Right Footwell Vent Temperature Sensor G262 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Reach through opening for operating and display module, Climatronic Control Module J255 and disconnect connector - **A** -.
- Give Right Footwell Vent Temperature Sensor G262 - **B** - approx. 90° turn in direction of arrow.
- Pull Right Footwell Vent Temperature Sensor G262 out of air conditioner.

NOTE:

- **observe arrangement of connectors to both sensors (Left Footwell Vent Temperature Sensor G261 and Right Footwell Vent Temperature Sensor G262 to avoid interchange).**

Sunlight Photo Sensor G107 , removing and installing

NOTE:

- **As of VIN 400000 in Model Year 2005 (for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN), vehicles are to be installed with a modified Sunlight Photo Sensor G107 and a modified operating and display module, Climatronic Control Module J255. Vehicles with operating and display modules, Climatronic Control Module J255 with part number index up to "AH" are only to be installed with Sunlight Photo Sensor G107 with part number 8E0 907 539 (vehicles up to VIN 399999 in Model Year 2005 for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN). Vehicles with operating and display modules, Climatronic Control Module J255 with part number index "AJ" onwards are only to be installed with Sunlight Photo Sensor G107 with part number 8P0 907 539 (vehicles as of VIN 400000 in Model Year 2005 for**

Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN) .

- **In the event of incorrect assignment between the Sunlight Photo Sensor G107 and the operating and display module, Climatronic Control Module J255 , the operating and display module, Climatronic Control Module J255 cannot evaluate the signal from the Sunlight Photo Sensor G107 and there will be problems with air conditioner control.**

Removal and installation on vehicles up to VIN 399999 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)

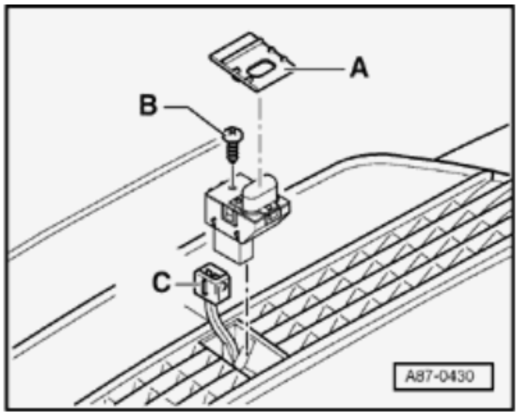

Fig. 122: Prying Cover Out Of Windshield Defroster Vent & Removing Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pry cover - **A** - in direction of arrow out of windshield defroster vent.
- Remove bolt - **B** -.
- Take Sunlight Photo Sensor G107 out of windshield defroster vent.
- Secure connector - **C** - to stop it sliding into instrument panel and disconnect it from Sunlight Photo Sensor G107.

Removal and installation on vehicles as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)

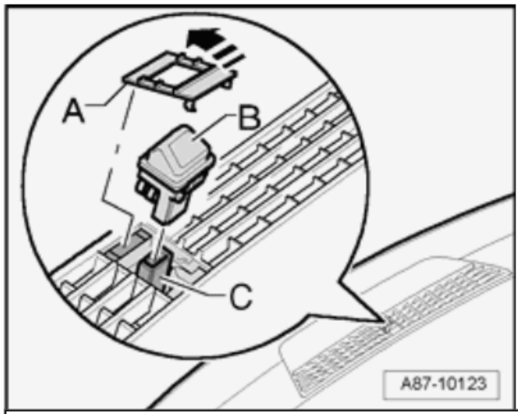

Fig. 123: Prying Cover Out Of Windshield Defroster Vent & Prying Sunlight Photo Sensor G107 Out Of Windshield Defroster Vent
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Carefully pry cover - **A** - in direction of arrow out of windshield defroster vent.
- Pry Sunlight Photo Sensor G107 - **B** - out of windshield defroster vent.

NOTE:
- **The Sunlight Photo Sensor G107 - B - is clipped into the defroster vent.**

- Secure connector - **C** - to stop it sliding into instrument panel and disconnect it from Sunlight Photo Sensor G107 - **B** -.

Evaporator housing drain, removing and installing

NOTE:
- **Incomplete evaporator drainage may lead to an odor nuisance. If applicable, check evaporator hose and evaporator valve and clean or replace if necessary.**

Removing

- Remove glove compartment, lower "A" -pillar trim and mat on passengers side -->
    - **68 - INTERIOR EQUIPMENT**
    - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET
- Carefully fold back floor covering.

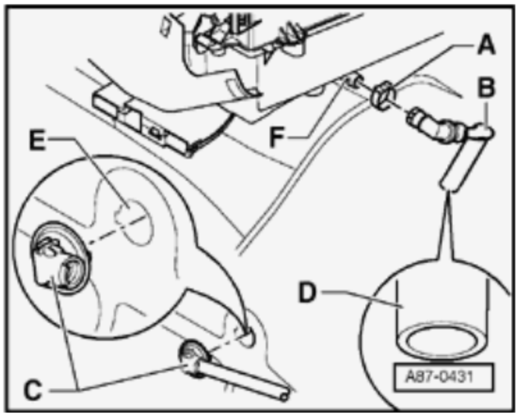

Fig. 124: Evaporator Housing Drain, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen clip - **A** -.
- Pull evaporator hose - **B** - with evaporator valve - **C** - out of floor panel.
- Remove evaporator valve - **C** -.

Installing

- In area of hole - **E** - check gap between noise insulation mat and floor panel (noise insulation mat must not make contact with installed evaporator valve - **C** -).
- Check evaporator valve - **C** - ; it must not be gummed up with wax or underseal.
- Check for contamination of evaporator hose - **B** - and clean hose before installing.

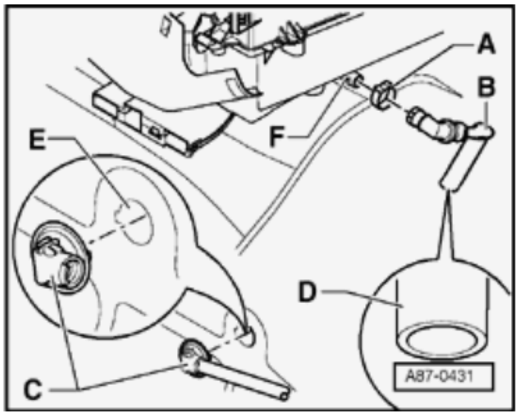

Fig. 125: Evaporator Housing Drain, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Fully insert evaporator valve - **C** - as shown (use soap solution as lubricant if applicable).
- Check evaporator hose - **B** -. It must not be twisted or crushed and must be positioned in recess provided in floor covering.
- Fasten clip - **A** -.
- Reinstall all components in reverse order.

Evaporator housing drain, checking

- Check routing of evaporator hose; it must not be twisted or crushed.
- Remove evaporator valve and evaporator hose --> **Evaporator housing drain, removing and installing**.

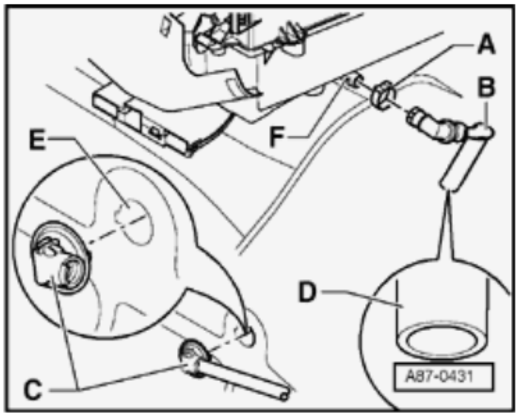

Fig. 126: Evaporator Housing Drain, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

  - In area of hole - **E** - check gap between noise insulation mat and floor panel (noise insulation mat must not make contact with installed evaporator valve).
  - Check evaporator valve - **C** - ; it must not be gummed up with wax or underseal.

NOTE:

- **There is no flap at the evaporator valve - C -. The flap function is assumed by a coil formed by the valve.**

  - Check for contamination of evaporator hose - **B** - (pay attention to oval cross-section of hose - **D** -) and clean if necessary.
  - Use a piece of wire to check for contamination of evaporator of air conditioner - **F** - and clean if necessary.

- In the event of moisture in the passenger compartment:

  - Check passenger compartment forced air extraction (via luggage compartment) --> **Air extraction vent, checking**.
  - Check signal for recognition of wiper operation at operating and display module, Climatronic Control Module J255.
  - Check dust and pollen filter for contamination and corresponding cover for correct installation --> **Dust and pollen filter element, removing and installing**.
  - Check the various control motors and the corresponding levers. Pay particular attention to position of Air Flow Flap Motor V71 and Recirculation Flap Motor V113 as well as the relevant flaps.
  - Check measured value of Evaporator Vent Temperature Sensor G263 --> **Read Measuring Value Block (function 08)** (Reading measuring value block, display group "010").
  - If the sensor measured value is too low under the usage conditions described by the customer (colder than 0 °C for lengthy period at ambient temperature above 0 °C), pay attention to notes on checking cooling output --> **A/C refrigerant system, testing**.
  - If the measured value of the Evaporator Vent Temperature Sensor G263 is too high under the usage conditions described by the customer (greater than e.g. 10 °C although air conditioner is functioning properly), check the Evaporator Vent Temperature Sensor G263 (incorrect measured value can cause evaporator to ice up).

Adapter cable, modifying to activate positioning motors

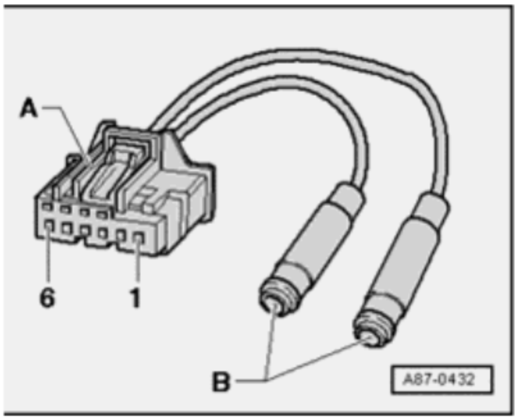

Fig. 127: Adapter Cable, Modifying To Activate Positioning Motors
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Make connection to contacts "5" and "6" of connector - **A** - (part number 6Q0 972 706) using wire with a cross section of 0.25 mm ^{2} in each case.
- Connect other end of each wire to a commercially available banana plug - **B** -.

Defroster Flap Motor V107 , removing and installing

Removing

- Remove glove compartment -->
    - **68 - INTERIOR EQUIPMENT**
    - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

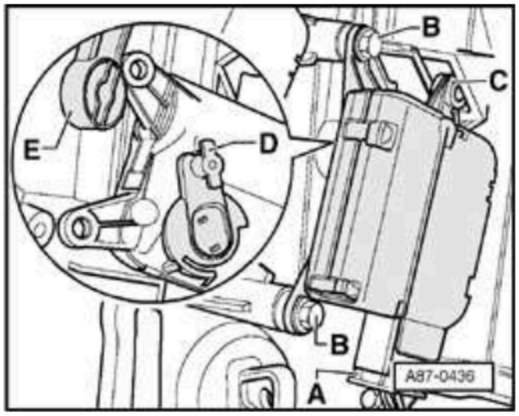

Fig. 128: Defroster Flap Motor V107 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** -.
- Remove bolts - **B** -.
- Remove control motor from mount - **C** -.

- Remove lever - **D** - of Defroster Flap Motor V107 from connecting rod - **E** -.

Installing

NOTE:

- **The control motor lever is color-coded. The lever for the Defroster Flap Motor V107 is dark green.**

Reinstall all parts removed in reverse order, paying attention to the following:

- Lay wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
- Check --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and erase DTC memory --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)** ; perform basic setting --> **Basic Setting (function 04)**.

NOTE:

- **Operation of the control motor can be checked as follows: Connect the two contacts "5" and "6" in the control motor connector to a 12V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses direction. Use adapter for this purpose --> Adapter cable, modifying to activate positioning motors.**

Right Temperature Flap Motor V159 , removing and installing

NOTE:

- **This control motor moves two flaps, which are interlinked by way of a connecting rod installed in the air conditioner (not visible from outside) --> Coupling element between temperature flaps "1" and "2". In the event of problems with temperature control, the connection between the flaps can be checked with the air conditioner in position and the heater core removed (for visual inspection, the flap can be viewed through the opening with the heater core removed). To check operation if applicable, reach through slot for heater core into air conditioner and move the flaps via the external lever.**

Removing

- Remove glove compartment -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .

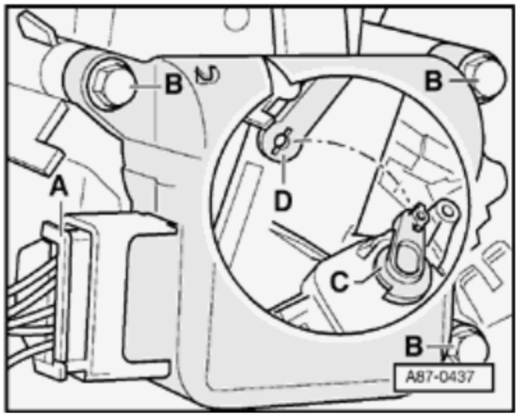

Fig. 129: Right Temperature Flap Motor V159 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** -.
- Remove bolts - **B** -.
- Remove lever - **C** - of Right Temperature Flap Motor V159 from connecting rod - **D** -.

Installing

NOTE:

- **The control motor lever is color-coded. The lever for the Right Temperature Flap Motor V159 is dark purple**

Reinstall all parts removed in reverse order, paying attention to the following:

- Lay wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
- Check --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and erase DTC memory --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)** ; perform basic setting --> **Basic Setting (function 04)**.

NOTE:

- **Operation of the control motor can be checked as follows: Connect the two contacts "5" and "6" in the control motor connector to a 12V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses direction. Use adapter for this purpose --> Adapter cable, modifying to activate positioning motors.**

Left Temperature Flap Motor V158 , removing and installing

NOTE:

- **This control motor moves two flaps, which are interlinked by way of a connecting rod installed in the air conditioner (not visible from outside) --> Coupling element between temperature flaps "1" and "2". In the event of problems with temperature control, the connection between the flaps can be checked with the air conditioner in position and the heater core**

removed (for visual inspection, the flap can be viewed through the opening for the heater core). To check operation if applicable, reach through slot for heater core into air conditioner and move the flaps via the external lever.

Removing

- Remove drivers storage compartment. -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

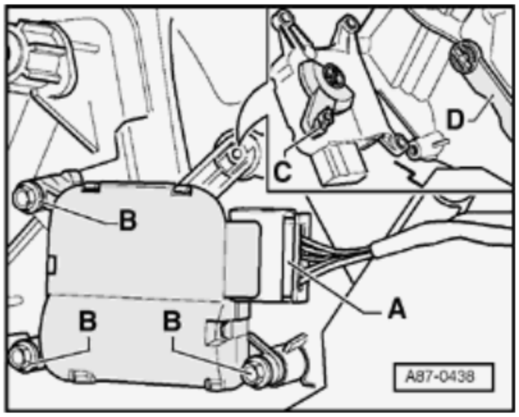

Fig. 130: Left Temperature Flap Motor V158 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** -.
- Remove bolts - **B** -.
- Remove lever - **C** - of Left Temperature Flap Motor V158 from connecting rod - **D** -.

Installing

NOTE:

- **The control motor lever is color-coded. The lever for the Left Temperature Flap Motor V158 is red.**

Reinstall all parts removed in reverse order, paying attention to the following:

- Lay wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
- Check --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and erase DTC memory --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)** ; perform basic setting --> **Basic Setting (function 04)**.

NOTE:

- **Operation of the control motor can be checked as follows: Connect the two contacts "5" and "6" in the control motor connector to a 12V DC**

source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses direction. Use adapter for this purpose --> Adapter cable, modifying to activate positioning motors.

Central Air Flap Motor V70 , removing and installing

Removing

- Remove glove compartment -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

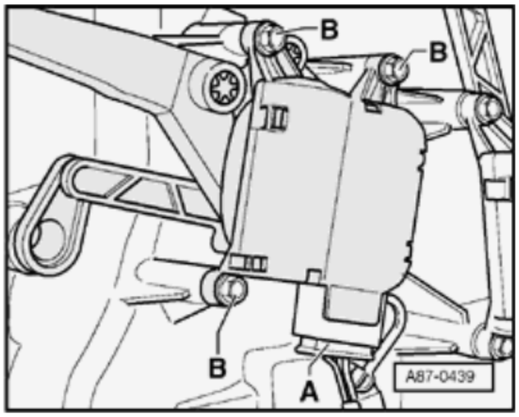

Fig. 131: Central Air Flap Motor V70 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** -.
- Remove bolts - **B** -.
- Remove Central Air Flap Motor V70.

Installing

NOTE:

- **The control motor cam plate is color-coded; for the Central Air Flap Motor V70 it is white**

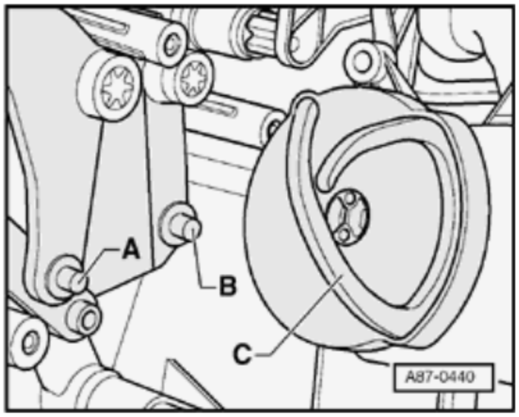

Fig. 132: Inserting Two Lugs In Cam Plate Groove
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert the two lugs - **A** - and - **B** - in the cam plate groove - **C** -.

Reinstall all parts removed in reverse order, paying attention to the following:

- Lay wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
- Check --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and erase DTC memory --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)** ; perform basic setting --> **Basic Setting (function 04)**.

NOTE:

- **Operation of the control motor can be checked as follows: Connect the two contacts "5" and "6" in the control motor connector to a 12V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses direction. Use adapter for this purpose --> Adapter cable, modifying to activate positioning motors.**

Recirculation Flap Motor V113 , removing and installing

Removing

- Remove glove compartment -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

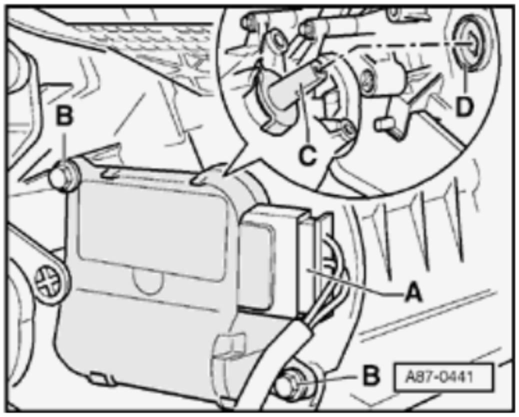

Fig. 133: Recirculation Flap Motor V113 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** -.
- Remove bolts - **B** -.
- Pull connecting element - **C** - of Recirculation Flap Motor V113 out of recirculated-air flap shaft - **D** -.

Installing

NOTE:

- **The control motor connecting element is color-coded; for the Recirculation Flap Motor V113 it is blue**

Reinstall all parts removed in reverse order, paying attention to the following:

- Lay wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
- Check --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and erase DTC memory --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)** ; perform basic setting --> **Basic Setting (function 04)**.

NOTE:

- **Operation of the control motor can be checked as follows: Connect the two contacts "5" and "6" in the control motor connector to a 12V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses direction. Use adapter for this purpose --> Adapter cable, modifying to activate positioning motors.**

Air Flow Flap Motor V71 , removing and installing

NOTE:

- **The flaps moved by this control motor are the fresh-air and air flow flaps.**

Removing

- Remove glove compartment -->

  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

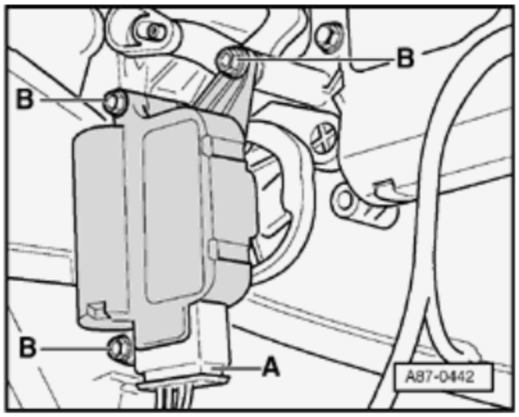

Fig. 134: Air Flow Flap Motor V71 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **A** -.
- Remove bolts - **B** -.
- Remove Air Flow Flap Motor V71.

Installing

NOTE:

- **The control motor cam plate is color-coded; for the Air Flow Flap Motor V71 it is light blue.**

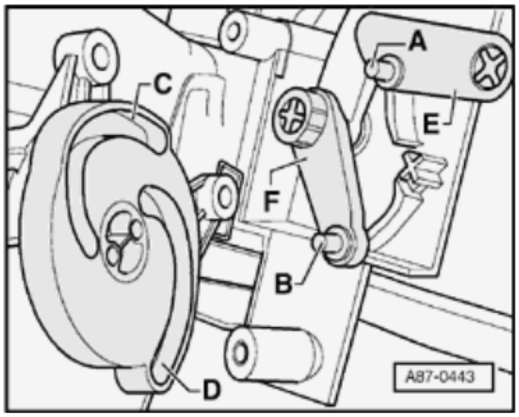

Fig. 135: Inserting Lug In Groove And Lug In Groove Of Cam Plate
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert lug - **A** - in groove - **C** - and lug - **B** - in groove - **D** - of cam plate (lugs - **A** - and - **B** - as well as grooves - **C** - and - **D** - have different dimensions).

NOTE:

- **When inserting, make sure that actuating arms - E - and - F - are correctly positioned on the corresponding pivot pins.**

Reinstall all parts removed in reverse order, paying attention to the following:

- Lay wiring harness such that it cannot come into contact with moving components (e.g. control motor lever).
- Check --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** and erase DTC memory --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)** ; perform basic setting --> **Basic Setting (function 04)**.

NOTE:

- **Operation of the control motor can be checked as follows: Connect the two contacts "5" and "6" in the control motor connector to a 12V DC source. The control motor moves as far as the stop in one direction. Interchanging positive and negative reverses direction. Use adapter for this purpose --> Adapter cable, modifying to activate positioning motors.**

Fresh Air Intake Duct Temperature Sensor G89 , removing and installing

Removing

- Remove glove compartment -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

.

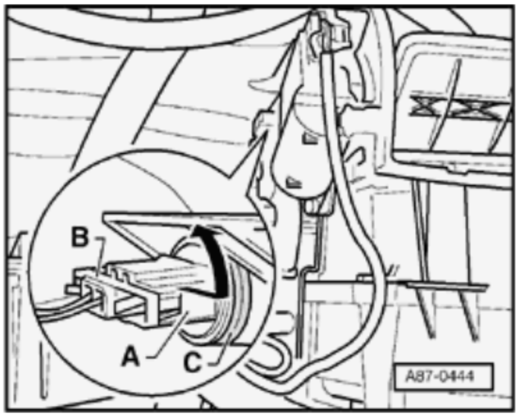

Fig. 136: Fresh Air Intake Duct Temperature Sensor G89 , Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Reach between air conditioner and bottom panel of plenum chamber, grasp hold of temperature sensor - **A** - and give it an approx. 90° turn in direction of arrow.
- Pull temperature sensor - **A** - out of air conditioner.
- Disconnect connector - **B** -.

NOTE:

- **If Fresh Air Intake Duct Temperature Sensor G89 cannot be removed:**
- **- Remove dust and pollen filter --> Dust and pollen filter element, removing and installing.**

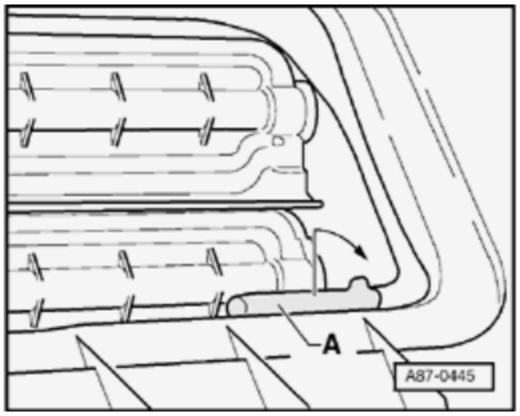

Fig. 137: Identifying Temperature Sensor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **- Give temperature sensor - A - approx. 90° turn in direction of arrow and remove it from intake housing in direction of passenger compartment.**

Installing

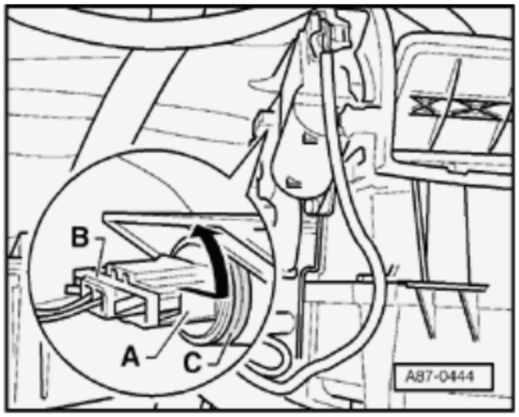

Fig. 138: Checking Position Of O-Ring
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check position of O-ring - **C** - (moisten slightly with lubricant if applicable).

Then reinstall all components removed in reverse order.

INSTRUMENT PANEL VENTS AND AIR GUIDES

Air guides in vehicle interior

NOTE:

- **The passenger compartment is vented by way of two air extraction vents (on left and right of luggage compartment in area of bumper) --> Air extraction vent, checking.**
- **The following illustration shows a instrument panel of the type installed in a Saloon or Avant up to VIN 399999 in Model Year 2005. The shape of the instrument panel on a Cabrio and for a Saloon or Avant as of VIN 400000 in Model Year 2005 (gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN) differs slightly from this illustration -->**
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM for BODY INTERIOR - CABRIOLET**

.

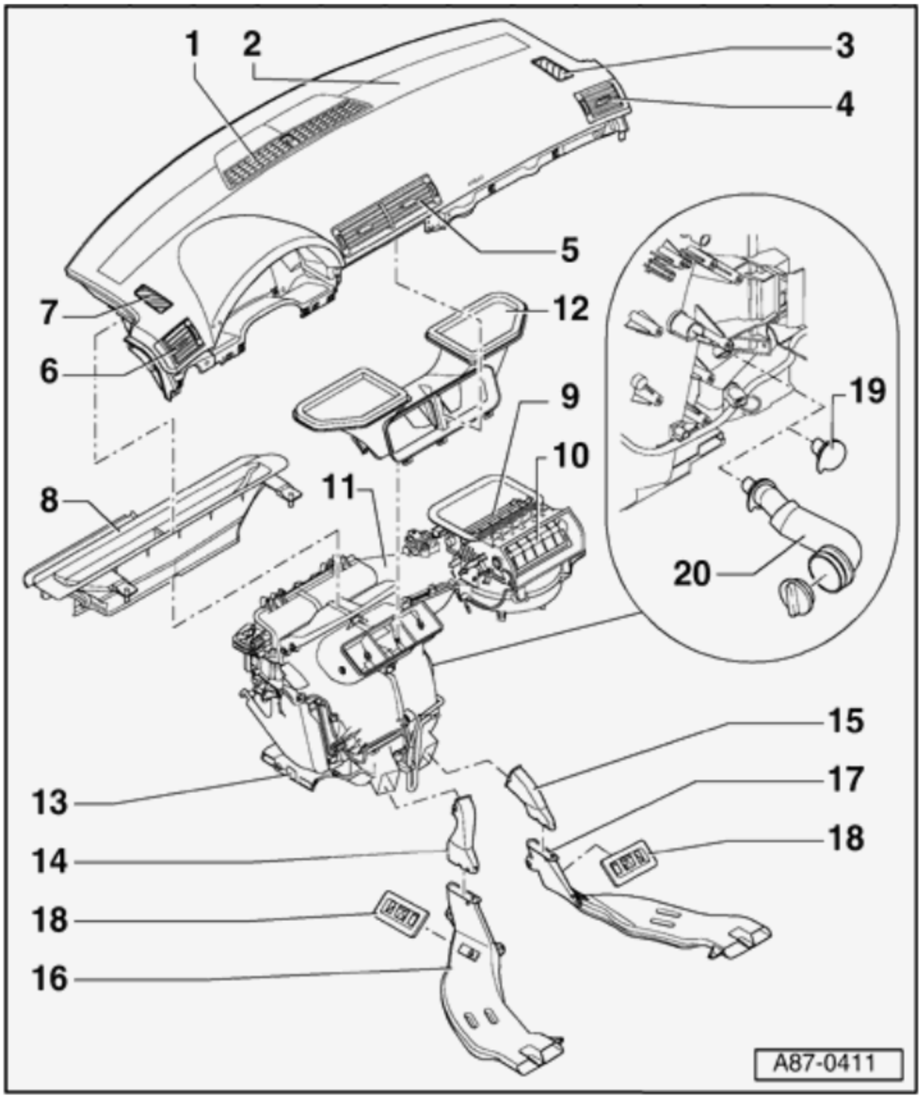

Fig. 139: Air Guides In Vehicle Interior Assembly Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Defroster outlet vent

- For windshield
- Removing and installing -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET
- Crushing of intermediate piece between air conditioner and air guide in instrument panel on installing instrument panel will result in irregular or inadequate air routing to windshield -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET
- Different versions for vehicles up to VIN 399999 and as of VIN 400000 in Model Year 2005 (different versions of Sunlight Photo Sensor G107 for Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)

2 - Instrument panel

- Removing and installing -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET
- Different versions for Saloon or Avant on vehicles up to VIN 399999 and as of VIN 400000 in Model Year 2005 (Saloon and Avant; gradual introduction for the Cabrio in week 46/04 without prior specification of any particular VIN)
- With air guides to defroster vents and instrument panel vents on "drivers and front passengers side"

3 - Defroster outlet vent

- Passengers side window
- Removing and installing -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

4 - Instrument panel vent

- Passengers side
- Removing and installing -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

5 - Instrument panel vent

- Center
- Removing and installing -->

  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

6 - Instrument panel vent

- Drivers side
- Removing and installing -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

7 - Defroster outlet vent

- Drivers side window
- Removing and installing -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

8 - Intermediate piece/defroster channel

- Removing and installing --> **Defroster outlet vent intermediate piece for front windshield, removing and installing**

9 - Fresh-air intake

- Air is drawn in via the dust and pollen filter installed in the plenum chamber

10 - Recirculated-air intake

- Air is drawn in beneath glove compartment from passengers footwell

11 - Air conditioner

- Removing and installing air conditioner --> **Heating and A/C unit, removing and installing**

12 - air guide/instrument panel vents

- Center

13 - Front footwell vents

- Drivers and passengers side
- Removing and installing --> **Footwell vents front, removing and installing**

14 - Intermediate piece to rear footwell vent air guide

- Drivers side

15 - Intermediate piece to rear footwell vent air guide

- Passengers side

16 - Air footwell vent duct, rear

- Drivers side

17 - Air footwell vent duct, rear

- Passengers side

18 - Trim panel with vent openings

19 - Sealing plug

- Only installed on vehicles without glove compartment cooling

20 - air guide to glove compartment

- Only installed on vehicles with glove compartment cooling

Air distribution in air conditioner

NOTE:

- **The cut-away view of the air conditioner shows the flaps in the "Air routing to footwell" position and the "Cooling" temperature setting (no air through heater core).**

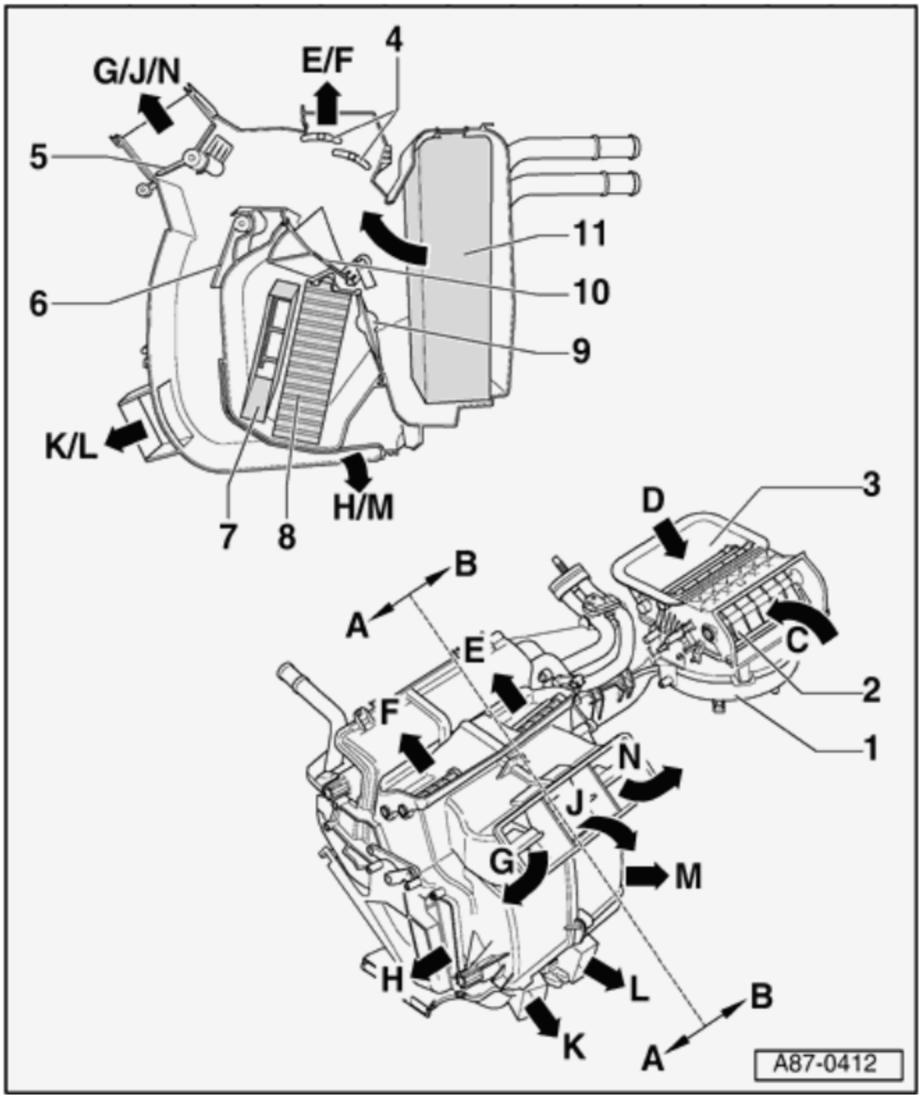

Fig. 140: Air Distribution In Air Conditioner
Courtesy of VOLKSWAGEN UNITED STATES, INC.

A - Drivers side

B - Passengers side

C - Passenger compartment air intake (recirculated-air mode)

- Via passengers footwell

D - Fresh-air intake

- Via dust and pollen filter in plenum chamber

E - To windshield vents (passengers side)

- The air from the center defroster vent comes from both sides of the air conditioner; its temperature is governed by the mixing ratio arising from the temperature settings made at the operating and display module, Climatronic Control Module J255

F - To windshield vents (drivers side)

- The air from the center defroster vent comes from both sides of the air conditioner; its temperature is governed by the mixing ratio arising from the temperature settings made at the operating and display module, Climatronic Control Module J255

G - To instrument panel vents, drivers side

H - To front footwell vent, drivers side

J - To instrument panel vents, center

- The air from these vents comes from both sides of the air conditioner; its temperature is governed by the mixing ratio arising from the temperature settings made at the operating and display module, Climatronic Control Module J255 and depending on which flaps are open or closed

K - To rear footwell vent, drivers side

L - To rear footwell vent, passengers side

M - To front footwell vent, passengers side

N - To instrument panel vents, passengers side

1 - Fresh Air Blower V2

- With Fresh Air Blower Control Module J126

2 - Recirculated-air flap

- Shown in "closed" position

3 - Fresh-air flaps

- Shown in "open" position
- The two flaps are activated independently via the cam plate and actuating arms installed to the control motor.

4 - Defroster flap

- Shown in "closed" position
- The two flaps are jointly activated by way of levers and coupling elements installed to the outside of the

air distributor housing.

5 - Central flap "1"

- Shown in "closed" position
- The shape of the two outer flaps is such that air can flow to the left and right vents with the central flap closed.
- The two central flaps are activated independently via the cam plate and actuating arms installed to the control motor.

6 - Central flap "2"

- Shown in "open" position, air routing to footwell vents
- The two central flaps are activated independently via the cam plate and actuating arms installed to the control motor.

7 - Auxiliary Air Heater Heating Element Z35

- Not installed on USA vehicles.

8 - Heating core

9 - Temperature flaps "2"

- One flap each for drivers and passengers side
- Shown in "cooling" position
- The temperature flaps "2" are activated by the temperature flaps "1" by way of coupling elements in the air distributor housing --> **Coupling element between temperature flaps "1" and "2"**.

10 - Temperature flaps "1"

- Shown in "cooling" position
- One flap each for drivers and passengers side

11 - evaporator

Coupling element between temperature flaps "1" and "2"

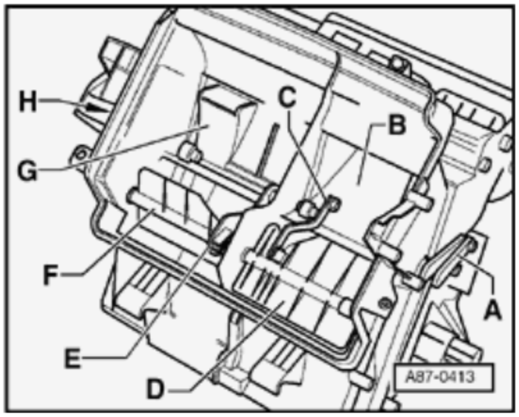

Fig. 141: Coupling Element Between Temperature Flaps "1" And "2"
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **A** - Coupling elements to Left Temperature Flap Motor (drivers side)

- **B** - Temperature flap "1" , drivers side

- **C** - Coupling element, drivers side

- **D** - Temperature flap "2" , drivers side

- **E** - Coupling element, passengers side

- **F** - Temperature flap "2" , passengers side

- **G** - Temperature flap "1" , passengers side

- **H** - Coupling elements to Right Temperature Flap Motor (passengers side)

NOTE:
- **The coupling elements between the two temperature flaps "1" and "2" can be seen via the opening with the heater core removed.**

Defroster outlet vent intermediate piece for front windshield, removing and installing

Removing

- Remove instrument panel -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

  .
- Remove mounting bracket for brake pedal (and clutch pedal) from instrument panel cross member. Refer to --> **46 - BRAKES - MECHANICAL COMPONENTS**

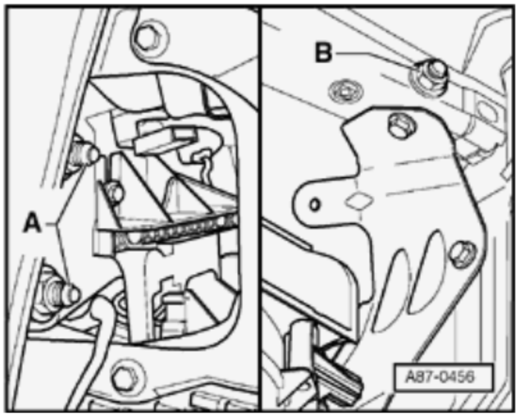

Fig. 142: Defroster Outlet Vent Intermediate Piece For Front Windshield, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen hex nuts - **A** - for instrument panel cross member on left and screw out by approx. 15 mm. -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET
- Remove hex nuts - **B** - for instrument panel cross member on right -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

.

- Remove connecting bolts between instrument panel cross member and windshield cross member (in passenger compartment) as well as connecting bolts between instrument panel cross member and plenum chamber (between electronics box and windshield cross member in plenum chamber). -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET
- Carefully pull instrument panel cross member to rear until it makes contact with nuts on left and is still resting on stud on right.

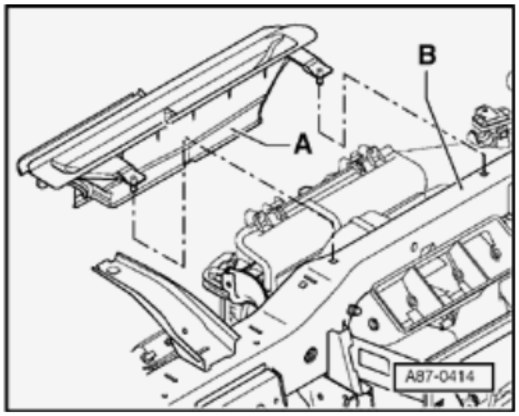

Fig. 143: Removing Intermediate Piece From Instrument Panel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove intermediate piece - **A** - from instrument panel cross member - **B** -.
- Remove intermediate piece - **A** -.

Installing

NOTE:

- **When installing instrument panel, make sure defrost intermediate piece is correctly positioned on defroster vent without crushing it.**
- **After installing instrument panel, check exit direction and distribution of air flow from defroster vent to windshield.**

Footwell vents front, removing and installing

Removing

- Remove glove compartment and center console. -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

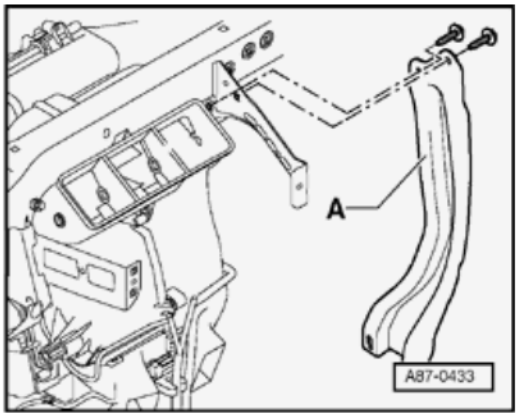

Fig. 144: Removing Support For Instrument Panel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove support - **A** - for instrument panel cross member (on passengers side at transmission tunnel). -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

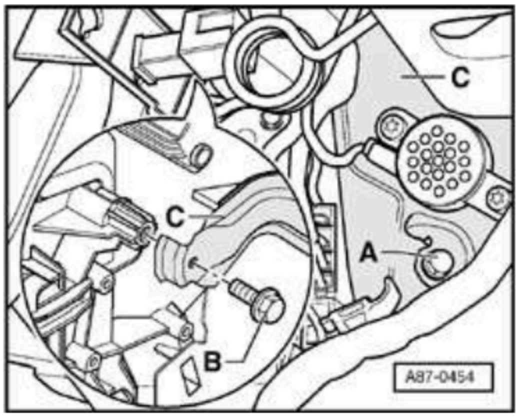

Fig. 145: Removing Bolts Between Support And Air Conditioner
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** - and - **B** - between support - **C** - and air conditioner.
- Remove support - **C** - for instrument panel cross member (on drivers side at transmission tunnel). -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET
- Remove the two intermediate pieces to the rear footwell vent air guide.
- Mark the two connectors - **A** - and - **B** - to the Left Footwell Vent Temperature Sensor G261 and the Right Footwell Vent Temperature Sensor G262 (to avoid interchange).

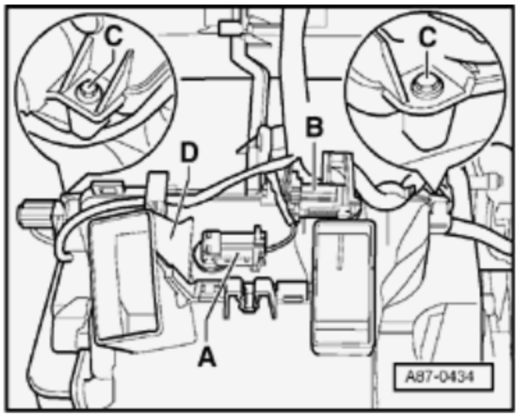

Fig. 146: Disconnecting Connectors From Footwell Vent Temperature Sensors & Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connectors - **A** - and - **B** - from footwell vent temperature sensors.
- Remove bolts - **C** -.
- If applicable, remove wiring harness from footwell vent - **D** -.
- Pull footwell vent slightly to rear and remove it in direction of passengers footwell.

Installing

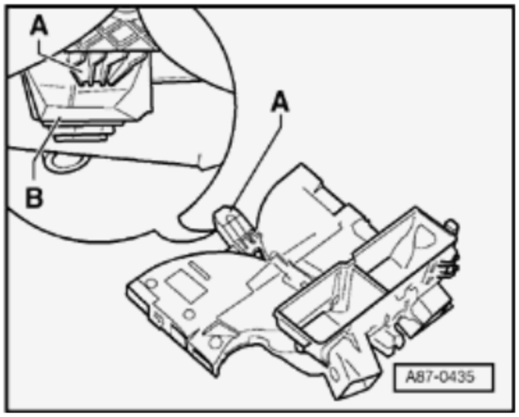

Fig. 147: Starting By Inserting Lug Of Footwell Vent In Mount Of Air Conditioner
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Start by inserting lug - **A** - of footwell vent in mount of air conditioner - **B** -.
- Reinstall all components in reverse order.

HEATING CORE, REMOVING AND INSTALLING

Heat exchanger, removing

Special tools and equipment

- Hose Clamps, Up To 40 mm. 3093 or Hose Clamps Up To 25mm Dia. 3094
- Commercially available compressed-air gun
- Cooling system tester V.A.G 1274/(with hand pump and appropriate adapters)

CAUTION:

- **On vehicles equipped with Audi Telematics by OnStar, switch-off the emergency (back-up) battery for the Telematic/Telephone Control Module prior to disconnecting the vehicle battery. Switch-on the emergency (back-up) battery after reconnecting the vehicle battery. -->**
  - **91 - COMMUNICATION**
  - **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for COMMUNICATION, CABRIOLET**

Removing

- Remove plenum chamber cover.
- Disconnect and remove Battery A. -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

NOTE:

- **If necessary, obtain radio anti-theft code before disconnecting Battery A.**
- **On vehicles with electrically adjustable seats, move seats to rearmost position before disconnecting Battery A.**

- Release pressure in coolant circuit by opening cap at coolant reservoir. -->
    - **19 - ENGINE - COOLING SYSTEM** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
    - **19 - ENGINE - COOLING SYSTEM** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
    - **19 ENGINE - COOLING SYSTEM** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
    - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
    - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
    - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

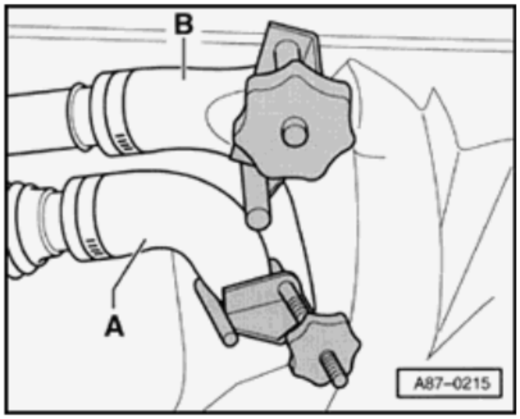

Fig. 148: Identifying Coolant Hoses
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark positions of coolant hoses - **A** - and - **B** -.
- Pinch off both coolant hoses to heater core of air conditioner (e.g. using Hose Clamps Up To 25mm Dia. 3094) and remove hoses.

NOTE:

- **Make sure coolant hoses are correctly connected:**
- **Coolant hose - A - supply from cylinder head**
- **Coolant hose - B - return to water pump**
- **Bleeding coolant circuit -->**
    - **19 - ENGINE - COOLING SYSTEM for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB**

  - **19 - ENGINE - COOLING SYSTEM for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT**
  - **19 ENGINE - COOLING SYSTEM for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF**

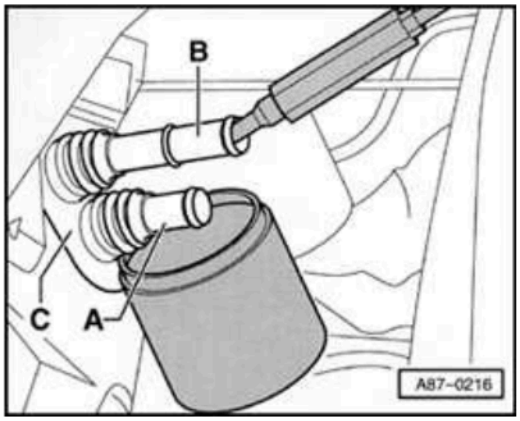

Fig. 149: Identifying Connections & Grommet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place container beneath connection - **A** -.
- Install section of tubing to connection - **B** - and use a compressed-air gun to carefully blow the coolant out of the heater core (into the container).
- Remove grommet - **C** -.
- Remove drivers storage compartment -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove accelerator pedal module. Refer to --> **20 - FUEL SUPPLY SYSTEM**

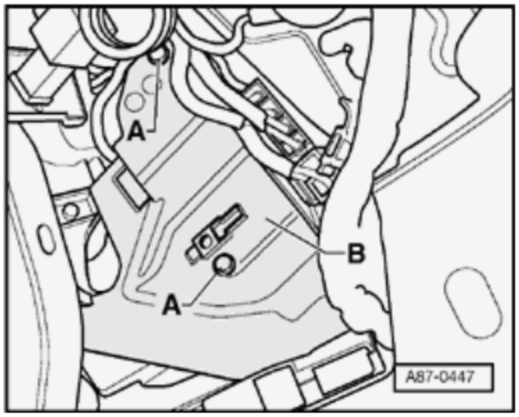

Fig. 150: Removing Bolts And Cover From Coolant Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** - and remove cover - **B** - from coolant lines.
- Protect floor covering beneath connections to heater core with absorbent paper.

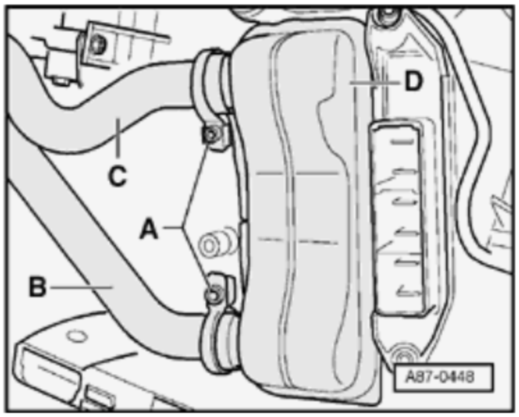

Fig. 151: Identifying Clips, Coolant Lines & Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen clips - **A** - and pull both coolant lines - **B** - and - **C** - out of heater core connections.
- Pull heater core - **D** - out of air conditioner.

Heat exchanger, installing

Installing

- With heater core removed, check for contamination of air conditioner (by way of heater core duct).
- Remove any dirt or remnants of escaped coolant from air conditioner (e.g. after removing leaking heater core).

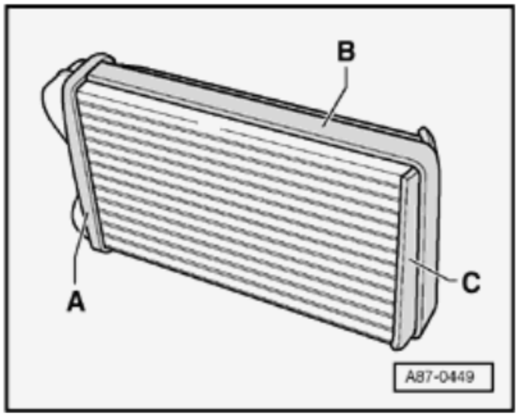

Fig. 152: Checking Seals Installed To Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check seals - **A** - , - **B** - and - **C** - installed to heater core. Only fit heater core with intact seals.

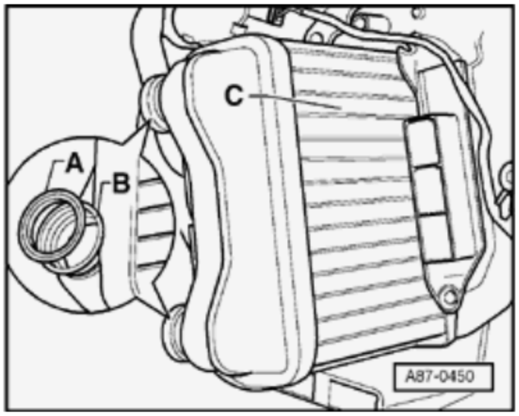

Fig. 153: Identifying New Seals & Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Moisten new seals - **A** - slightly with coolant.
- Insert new seals - **A** - (included in scope of delivery of heater core) in connections of heater core - **B** -.
- Slide heater core - **C** - into air conditioner.

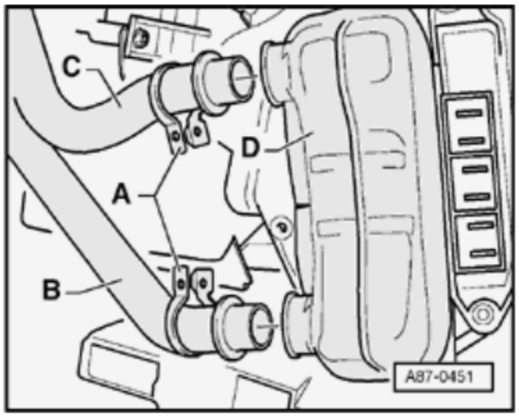

Fig. 154: Identifying Old/New Clips, Coolant Lines & Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove old clips - **A** - from both coolant lines - **B** - and - **C** -.
- Install new clips - **A** - (included in scope of delivery of heater core) to both heater core coolant lines as shown.
- Press both coolant lines - **B** - and - **C** - into connections of heater core - **D** -.
- Re-check position of seals between coolant lines and heater core.

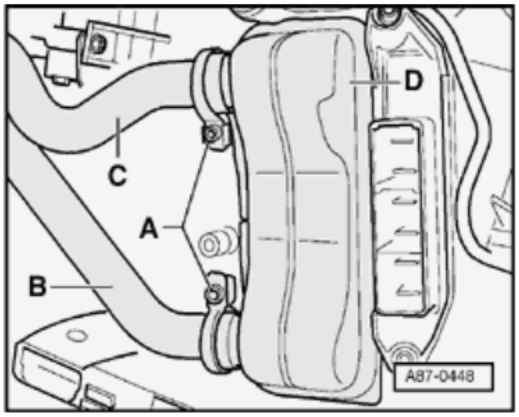

Fig. 155: Identifying Clips, Coolant Lines & Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install the two coolant lines - **B** - and - **C** - with clips - **A** - to the heater core.
- Check position of both clips - **A** -. They must completely surround the flange at the heater core and coolant line and not make contact with other components.
- Tighten bolts at clips - **A** - to 2.5 Nm.
- Make sure coolant hoses are properly connected to heater core. observe markings:

A - Supply hose from cylinder head

B - Return hose to water pump

- Reinstall components removed (with the exception of drivers storage compartment) in reverse order.
- Bleed coolant circuit -->
  - **19 - ENGINE - COOLING SYSTEM** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **19 - ENGINE - COOLING SYSTEM** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **19 ENGINE - COOLING SYSTEM** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH

  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

NOTE:

- **The arrangement of the coolant lines to the heater core of the air conditioner is such that the heater core must also be bled. Proceed as follows:**
- **- Bleed coolant circuit.**
- **- Switch off ignition.**
- **- Carefully open cap at coolant reservoir (observe safety precautions for opening cap) -->**
  - **19 - ENGINE - COOLING SYSTEM for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB**
  - **19 - ENGINE - COOLING SYSTEM for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT**
  - **19 ENGINE - COOLING SYSTEM for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF**

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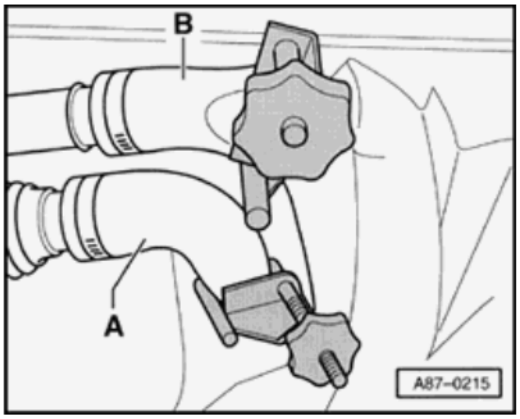

Fig. 156: Identifying Coolant Hoses
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **Loosen clip at coolant hose - B -.**

- **Slide back hose - B - until hole in hose is no longer sealed off by line.**
- **Use cooling system tester V.A.G 1274/hand pump for example to increase pressure in coolant circuit.**
- **Bleed heater core by way of hose - B - until there are no bubbles in coolant emerging.**
- **Install coolant hose - B - and secure with clip.**
- **Replenish coolant if necessary.**

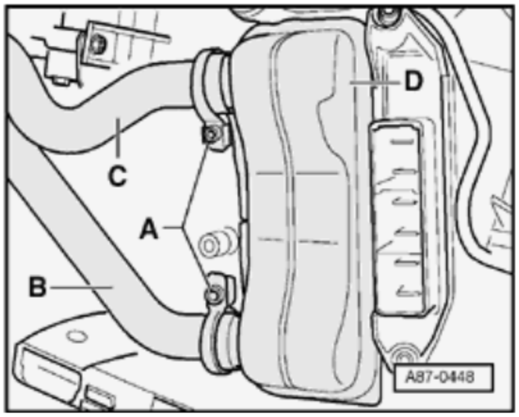

Fig. 157: Identifying Clips, Coolant Lines & Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check coolant circuit for leaks, paying particular attention to connection between coolant lines and heater core. -->
    - **19 - ENGINE - COOLING SYSTEM** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
    - **19 - ENGINE - COOLING SYSTEM** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
    - **19 ENGINE - COOLING SYSTEM** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
    - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
    - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
    - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF
- Reinstall drivers storage compartment and remaining components removed.

A/C REFRIGERANT SYSTEM, TESTING

Special tools and equipment

- Diagnostic Operation System VAS 5051A e.g. with Diagnostic Cable - 3 Meter VAS 5051/5A and K-

Lead Adapter Vas6017B VAS 6017B (or K-Lead Adapter VAS 6017A)
- Minitester V.A.G 1362 (for temperature measurement) or commercially available thermometer

Test requirements

- Ambient temperature above 15 °C
- Radiator and condenser clean (clean if necessary)
- Ribbed belt for compressor drive OK and correctly tensioned, pulley actually driving compressor (not for vehicles with 8-cyl. engine)
- Compressor drive unit (connection between compressor and engine) properly installed (vehicles with 8-cyl. engine only --> **Vehicles with 8 cyl. engine (compressor drive via a shaft)**)
- All air guides, covers and seals OK and properly installed
- Air flow through dust and pollen filter not impeded by contamination
- Vehicle not exposed to sunlight
- Engine warm
- DTC memory checked --> **Diagnostic Trouble Code (DTC) Memory, checking (function 02)** , all displayed faults eliminated and DTC memory erased --> **Diagnostic Trouble Code (DTC) Memory, erasing (function 05)**
- Coding checked and corrected if necessary --> **Climatronic Control Module J255, coding (function 07)** and reading measuring value block --> **Read Measuring Value Block (function 08)**
- Basic setting performed --> **Basic Setting (function 04)**
- All instrument panel vents open
- Hood closed
- Settings on operating and display module, Climatronic Control Module J255 :
  - "Auto" mode
  - "LO" temperature setting (for drivers and passengers side)
  - Compressor on (lamp in ECON button not lit)
- Functions with engine running (and air conditioner switched on):
  - Operation of Coolant Fan V7 (speed governed by pressure in refrigerant circuit and engine temperature)
  - Operation of Fresh Air Blower V2 at maximum speed
  - Switching of air conditioner to recirculated-air mode (approx. 1 minute after starting vehicle, fresh-air/air flow flaps are closed and recirculated-air flap opened, air is drawn in by Fresh Air Blower V2 from passengers footwell)

NOTE:

- **If one of these test requirements is not fulfilled, check DTC memory --> Diagnostic Trouble Code (DTC) Memory, checking (function 02) and**

perform Output Diagnostic Test Mode (DTM) diagnosis --> Output Diagnostic Test Mode (DTM) (function 03).

Checking

- Measure ambient temperature (must be above 15 °C).
- Close doors, hood, windows and sun roof.
- Open all instrument panel vents.
- Switch ignition on.
- Set "ECON" mode on operating and display module, Climatronic Control Module J255 (lamp in ECON button lights).
- Start engine.
- Start air conditioner On Board Diagnostic (OBD) --> **Diagnostic Operation System VAS 5051A , connecting and selecting functions**.
- In "Reading measuring value block" function --> **Read Measuring Value Block (function 08)** , select display group "001".
- Check display in display zones:
- Display field "2" shows 0% (compressor off).
- Display field "4" indicates that pressure in refrigerant circuit at measured ambient temperature is equal to or greater than value in table.

Ambient temperature in °C	Displayed pressure (in bar absolute)
15	4.7
20	5.6
25	6.6
30	7.6
35	8.8

NOTE:

- **At absolute pressure, "0 bar" corresponds to an absolute vacuum. Normal ambient pressure thus corresponds to roughly " 1 bar " absolute. On the scales of most pressure gauges, "0 bar" corresponds to an absolute pressure of one bar (can be seen from "-1" mark below "0").**
- **The pressure in the refrigerant circuit is governed by ambient temperature. Due to heat emitted by components (e.g. coolant fan), the pressure displayed with warm engine is slightly higher than that indicated for the relevant ambient temperature.**
- **If the pressure displayed is lower than that given in the table, check measured value of High Pressure Sensor G65 --> Read Measuring Value Block (function 08) "Reading measuring value block" and "Electrical checks, test step 5". If no malfunction is found at the High Pressure**

Sensor, there is not enough refrigerant in the circuit --> 87 - AIR CONDITIONING

If pressure in refrigerant circuit is OK:

- Switch on compressor by selecting "Auto" mode on operating and display module, Climatronic Control Module J255 (lamp in ECON button does not light).
- Set "Lo" temperature (for drivers and passengers side) on operating and display module, Climatronic Control Module J255.
- Set air outflow direction on operating and display module, Climatronic Control Module J255 to "instrument panel vents".
- In "Reading measuring value block" function --> **Read Measuring Value Block (function 08)** , select display group "001".

- Check display in display zones:
- Display field "2" shows a duty cycle of greater than 30% (activation of A/C Compressor Regulator Valve N280 , compressor is switched on).
- Display field "1" shows a current of greater than 0.3 A (current flowing via A/C Compressor Regulator Valve N280 , compressor is switched on).
- Displayed pressure in zone "4" rises above value when compressor is switched off.

NOTE:

- **The A/C Compressor Regulator Valve N280 is activated by the operating and display module, Climatronic Control Module J255 such that the temperature of the air downstream of the evaporator reaches the specified value (approx. 2 to 5 °C). After starting the vehicle, a value greater than 75 % (0.55A) is displayed depending on measured temperature, engine speed and electrical system voltage. As soon as the temperature measured by the Evaporator Vent Temperature Sensor G263 approaches the specified value, activation is cancelled and compressor output thus reduced.**
- **Under certain operating conditions, residual moisture in the coolant circuit may lead to the formation of ice at the compressor regulating valve. Such ice formation impairs compressor control, the evaporator is cooled excessively and ices up. Icing-up of the evaporator may give rise to the following problems:**
- **- Repeated or sporadic failure of air conditioner (no cooling/heat output) after a long journey; air conditioner functions properly again after a short delay following engine shutoff.**
- **- Misting up of windows on inside after a long journey; windows are initially not cleared even by pressing "Defrost" button; air conditioner functions properly again after a short delay following engine shutoff.**
- **Remedy:**
- **- Check measured value of Evaporator Vent Temperature Sensor G263 --> Read Measuring Value Block (function 08) "Reading measuring value**

block" , display group "010".

- **If the sensor measured value is too high under usage conditions described by customer (greater than e.g. 10 °C although air conditioner is functioning properly), check Evaporator Vent Temperature Sensor G263 (incorrect measured value can cause evaporator to ice up).**
- **- If the sensor measured value is too low under usage conditions described by customer (colder than 0 °C for lengthy period at ambient temperature above 0 °C) although the A/C Compressor Regulator Valve N280 is not currently being activated, the vehicle must be taken to a dealership which services A/C systems.**
- **- Check refrigerant line between evaporator and accumulator (thick line, low-pressure end) with engine running. If this line is severely iced up when the problem occurs (a thin layer of ice is permissible), this is also an indication that the temperature in the evaporator is too low.**
- **- Make the air conditioner workshop aware of any problem encountered. The necessary work discharging of refrigerant circuit, replacement of and subsequent evacuation of refrigerant circuit for at least 3 hours. --> 87 - AIR CONDITIONING**
- **- If display zone "1" shows no or insufficient current, check activation of A/C Compressor Regulator Valve N280 "Electrical checks, test step 6".**
- **- If the pressure indicated in display zone "4" does not change and compressor activation is OK (display zones "1" and "2"), there is a malfunction in the refrigerant circuit --> 87 - AIR CONDITIONING**

- Press recirculated-air flap button ("recirculated-air mode" symbol in button lights).
- Set engine speed to 2000 RPM (start of time measurement).
- In "Reading measuring value block" function --> **Read Measuring Value Block (function 08)** , select display group "010".

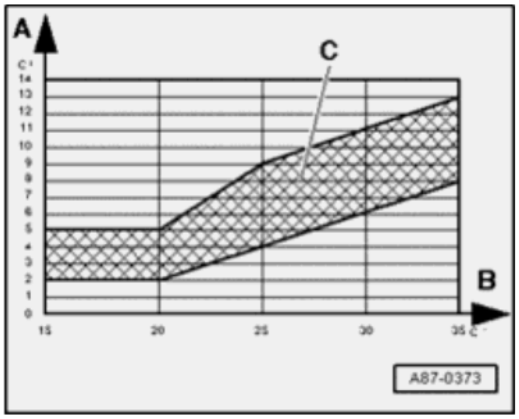

Fig. 158: Evaporator Vent Temperature Sensor G263 Values Graph
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Compare measured value indicated in display zone "1" (for Evaporator Vent Temperature Sensor G263) to values in graph.

A - Air temperature measured by Evaporator Vent Temperature Sensor G263

B - Ambient temperature

C - Permissible tolerance range

Depending on ambient temperature, the measured air temperature must be within the stated tolerance range after 5 minutes.

NOTE:

- **If the required values are not attained, check measured value of Evaporator Vent Temperature Sensor G263. Compare measured values shown in display groups "010" , zone "1" and "009" , zones "3" and "4" :**
- **- If the measured value in the two display zones "3" or "4" only differs slightly from the measured value in display group "010" , perform "Corrective actions if readout does not match specification" --> Identifying malfunctions if specified values are not obtained.**
- **- If the measured value of the Evaporator Vent Temperature Sensor G263 is higher than that of the Left Vent Temperature Sensor G150 and the Right Vent Temperature Sensor G151 , check proper installation of Evaporator Vent Temperature Sensor G263 and perform electrical check for this sensor "Electrical checks, test step 2".**
- **Operation of the air conditioner can be established, for example, from cooling down of the refrigerant line on the "low-pressure end" (thick line).**

If the measured value of the Evaporator Vent Temperature Sensor G263 (and thus the air conditioner cooling output) is OK:

- Compare measured value indicated in zone "1" of display group "010" (for Evaporator Vent Temperature Sensor G263) to measured values of display group "009" , zones "3" and "4" (Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151).

After 5 minutes, the measured values in display group "009" , zones "3" and "4" (Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151) must not be more than 3 °C higher than the value in zone "1" of display group "010" (for Evaporator Vent Temperature Sensor G263).

NOTE:

- **If the required values are not attained, compare measured values indicated in display group "009" , display zones "3" and "4" :**
- **- If the measured value in one of the two display zones "3" or "4" is OK, check the temperature flap control motor for the side on which the measured value is not OK (Left Temperature Flap Motor V158 or Right Temperature Flap Motor V159) and perform electrical checks for Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151 "Electrical checks, test step 2".**

- **- If the measured value in display zones "3" or "4" of display group "009" is lower than that in display zones "1" of display group "010" , check Evaporator Vent Temperature Sensor G263 , Left Vent Temperature Sensor G150 and Right Vent Temperature Sensor G151 for proper installation and contact resistance at electrical connections and replace defective sensor if necessary.**
- **- If no malfunction is found at the Left Vent Temperature Sensor G150 or the Right Vent Temperature Sensor G151 and at the Left Temperature Flap Motor V158 or the Right Temperature Flap Motor V159 , perform measures to be taken in the event of temperature increase downstream of evaporator --> Identifying malfunctions at temperature increase behind condenser.**

- The temperature of the air flow from the "Center" instrument panel vents can additionally be measured using the Minitester V.A.G 1362 (or a commercially available thermometer).
- Display group "009" , display zones "1" and "2" indicates the measured value for the Left Footwell Vent Temperature Sensor G261 and the Right Footwell Vent Temperature Sensor G262. As the air flow in "Auto" mode is only routed to the instrument panel vents, these two sensors indicate an imprecise value in this setting. Pressing the "Air down" button makes it possible to incorporate these sensors into the test as well.

Identifying malfunctions if specified values are not obtained

<table>
<tr><td colspan="3">○ In "Reading measuring value block" function --> Read Measuring Value Block (function 08) , select display group "001".
○ Repeat cooling output test --> A/C refrigerant system, testing.
○ During cooling output test, observe display in zones "1" and "4". Activation for A/C Compressor Regulator Valve N280 deactivated during cooling output test (drop in control current to below 0.55 A)?</td></tr>
<tr><td>? Yes ?</td><td colspan="2">? No ?</td></tr>
<tr><td>○ check DTC memory --> Diagnostic Trouble Code (DTC) Memory, checking (function 02) , eliminate faults displayed and erase DTC memory --> Diagnostic Trouble Code (DTC) Memory, erasing (function 05).</td><td colspan="2">• Increase in pressure in refrigerant circuit (display zone "4") during cooling output test?</td></tr>
<tr><td>○ Read measuring value block, display group "002" (compressor shutoff criteria) and eliminate cause of shutoff.</td><td>? Yes ?</td><td>? No ?</td></tr>
<tr><td>○ Repeat cooling output test.</td><td>? Test continued (increase in pressure in refrigerant circuit) Continuation of test - Pressure in refrigerant circuit increases</td><td>○ Fault in refrigerant circuit --> 87 - AIR CONDITIONING * See note.</td></tr>
</table>

* If applicable, check again that compressor is actually being driven. On vehicles with 8-cyl. engine, the drive shaft may have become removed from the compressor drive unit for example --> **Compressor drive unit, checking, replacing**

Continuation of test - Pressure in refrigerant circuit increases

<table>
<tr><td colspan="3">○ Open hood.
○ Repeat cooling output test --> A/C refrigerant system, testing.
• Operation of Coolant Fan V7 during cooling output test (speed is governed by coolant temperature and pressure in refrigerant circuit; determined by engine control unit)?</td></tr>
<tr><td colspan="2">? Yes ?</td><td>? No ?</td></tr>
<tr><td colspan="2">○ Read measuring value block, display group "001" zone "4" (pressure in refrigerant circuit).
• Operation of Coolant Fan V7 at higher speed with increase in pressure in refrigerant circuit (reading measuring value block, display group "014")</td><td>○ Check activation of Coolant Fan V7 , perform Output Diagnostic Test Mode (DTM) diagnosis --> Output Diagnostic Test Mode (DTM) (function 03).
○ Repair activation of Coolant Fan V7.
○ Repeat cooling output test --> A/C refrigerant system, testing.</td></tr>
<tr><td>? Yes ?</td><td>? No ?</td><td></td></tr>
<tr><td>○ Fault in refrigerant circuit. --> 87 - AIR CONDITIONING</td><td colspan="2">○ Check activation of Coolant Fan V7 --> Output Diagnostic Test Mode (DTM) (function 03) (perform Output Diagnostic Test Mode (DTM) diagnosis).
○ Repair activation of Coolant Fan V7.</td></tr>
</table>

NOTE:

- **The pressure in the refrigerant circuit is governed by various factors. In general, however, at an ambient temperature of 20 to 25 °C the pressure should not exceed 20 bar. Under extreme usage conditions (e.g. in hot countries with high ambient temperatures, "stop and go traffic" and high relative humidity), the high cooling output then required may also result in pressures of up to 31 bar.**
- **At ambient temperatures below 25 °C the pressure in the refrigerant circuit does not usually rise above 16 bar (Coolant Fan V7 run(s) and cool(s) condenser).**
- **The duty cycle (reading measuring value block --> Read Measuring Value Block (function 08) , display group "001" , display zone "3") is used by the operating and display module, Climatronic Control Module J255 to calculate the pressure in the refrigerant circuit.**

- **If the duty cycle is less than 12.5% (corresponding to approx. 1.8 bar absolute pressure) and greater than 87.5% (corresponding to approx. 32 bar absolute pressure), the operating and display module, Climatronic Control Module J255 does not switch on the compressor (the A/C Compressor Regulator Valve N280 is not activated). The compressor is only re-activated once the duty cycle exceeds 12.5% (corresponding to absolute pressure of 1.8 bar) or drops below 48% (corresponding to absolute pressure of 16 bar).**
- **To prevent abrupt compressor shutoff because of excessive pressure in the refrigerant circuit or excessive coolant temperature, the compressor output is reduced by the operating and display module, Climatronic Control Module J255 :**
- **- As soon as the pressure in the refrigerant circuit exceeds 30 bar (absolute) (full compressor output is not released again until pressure has dropped below 27 bar)**
- **- As soon as the coolant temperature exceeds 115 °C (full shutdown at 118 °C)**
- **If the pressure in the refrigerant circuit had been in excess of 32 bar (duty cycle greater than 87.5%), the operating and display module, Climatronic Control Module J255 does not reactivate the compressor until the pressure has dropped below 29 bar (duty cycle less than 84%).**
- **For further notes on pressure in refrigerant circuit, refer to --> Read Measuring Value Block (function 08) "Reading measuring value block" , display group "001".**

Identifying malfunctions at temperature increase behind condenser

- Pinch off both coolant hoses between engine and heater core with Hose Clamps Up To 25mm Dia. 3094.
- Repeat cooling output test --> **A/C refrigerant system, testing**.

- Do the two measured values in display zones "3" and "4" of display group "009" differ by less than 3 °C from the measured value of the Evaporator Vent Temperature Sensor G263 (display zone "1" of display group "010")?

? Yes ?	? No ?
○ Remove hose clamps at both coolant hoses. ?	○ Check correct installation of sensor with measured value deviation, as well as checking electrical connections for contact resistance.

○ Check activation of Left Temperature Flap Motor V158 and Right Temperature Flap Motor V159 --> **Output Diagnostic Test Mode (DTM) (function 03)** (perform Output Diagnostic Test Mode (DTM) diagnosis). ○ Check position of temperature flaps and corresponding levers for Left Temperature Flap Motor V158 and Right Temperature Flap Motor V159 and --> **Left Temperature Flap Motor V158 , removing and installing** and --> **Right Temperature Flap Motor V159 , removing and installing**	○ Eliminate cause of incorrect measured value. Replace defective sensor.

A/C REFRIGERANT SYSTEM, SERVICING

A/C refrigerant system, servicing

NOTE:

- **The refrigerant in the refrigerant circuit is never to be topped up (drain, evacuate and refill circuit) --> 87 - AIR CONDITIONING .**
- **The compressor is always driven when the engine is running; there is no A/C clutch. The engine is therefore not to be started unless the refrigerant circuit has been properly assembled. If, for example, the refrigerant lines have not been connected to the compressor, heat generation inside the compressor with the engine running may lead to destruction of the compressor. Internal heating is caused by the compressor operating even at almost 0% delivery rate in opposition to a fixed resistance (sealed circuit).**
- **To stop the compressor being destroyed when the refrigerant circuit is empty, it is designed such that delivery is reduced to roughly 0% and lubrication is maintained by way of an internal oil circuit with the oil left in the compressor.**
- **Replacement compressors contain the full quantity of refrigerant oil required for the refrigerant circuit --> 87 - AIR CONDITIONING .**
- **Different refrigerant oils are specified for "Zexel" , "Sanden" and "Denso" compressors --> 87 - AIR CONDITIONING .**
- **The specified O-ring diameters and the tightening torques also apply to bolted joints of refrigerant lines/hoses between the individual components.**
- **Only fit O-rings approved for refrigerant R134a --> 87 - AIR CONDITIONING .**
- **Checking cooling output --> A/C refrigerant system, testing**
- **Checking pressures in refrigerant circuit --> 87 - AIR CONDITIONING**
- **For all other servicing and testing work not described in this article, refer to --> 87 - AIR CONDITIONING**

A/C refrigerant system, component overview

HD = High pressure side

ND = Low pressure side

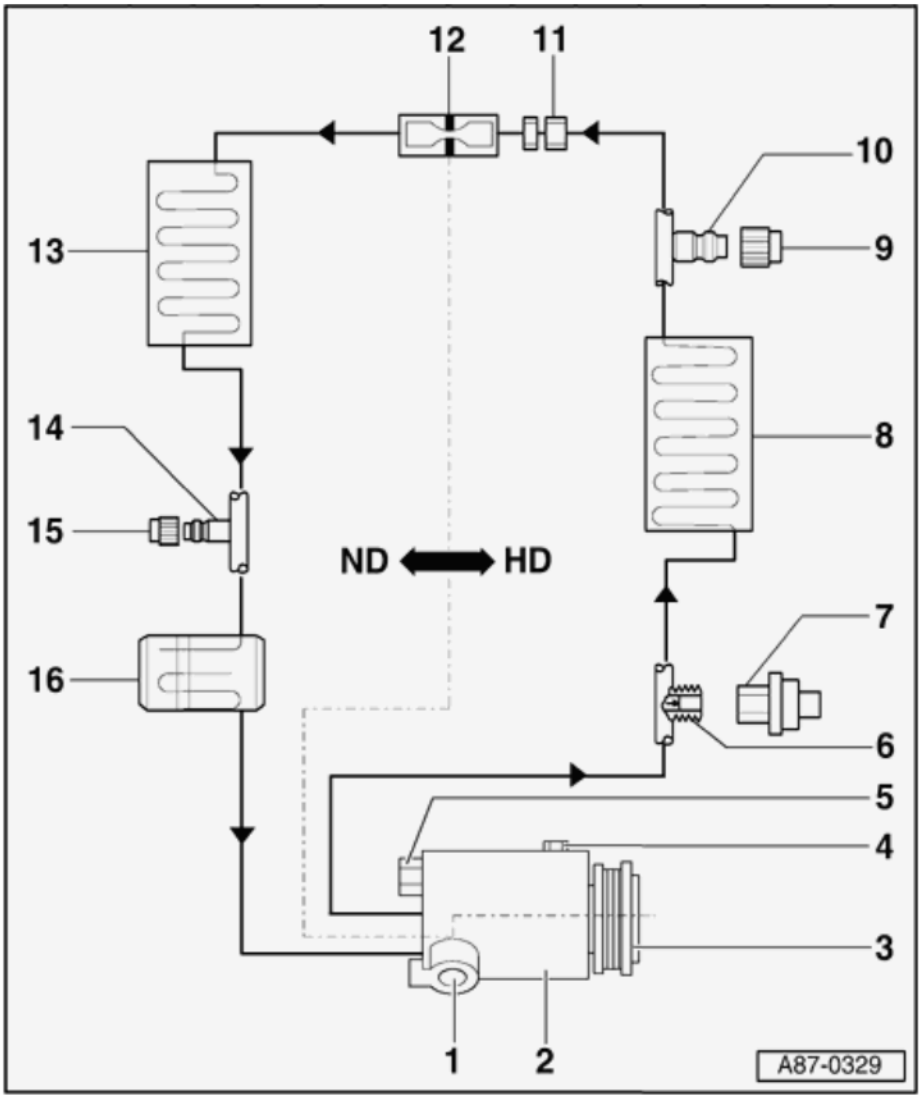

Fig. 159: A/C Refrigerant System, Component Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - A/C Compressor Regulator Valve N280

- Do not remove
- Checking activation and function

NOTE:

- **The A/C Compressor Regulator Valve N280 is activated by the operating and display module, Climatronic Control Module J255 and controls the pressure on the low-pressure end of the refrigerant circuit.**

2 - Compressor

- Removing refrigerant line at compressor/installing --> **Refrigerant lines on compressor, removing and installing**
- Replace O-rings at connections
- To protect compressor, engine is only to be started following complete assembly of refrigerant circuit
- Removing ribbed belt -->
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **13 ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **13 - ENGINE - CRANKSHAFT, CYLINDER BLOCK** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF
- Removing and mounting compressor --> **Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine)**
- Different compressors depending on country version and engine --> **Refrigerant system, servicing**
- On vehicles with 8-cyl. engine, the compressor is not driven via a belt, but rather by way of a shaft --> **Compressor drive unit, checking, replacing**
- After the installation of a new compressor or adding fresh refrigerant oil (e.g. after blowing out the refrigerant circuit), give the compressor 10 turns by hand after installing and prior to initial start-up to prevent compressor damage

3 - Oil drain plug

- "Denso" compressors are installed with a sealing ring which is always to be replaced
- Tightening torque: 30 Nm
- Compressor must be removed before screwing out to drain off refrigerant oil. Crank compressor by way of pulley or drive unit to accelerate drainage of refrigerant oil --> **87 - AIR CONDITIONING**

4 - Belt pulley/compressor drive unit

- Replacing belt pulley --> **Belt pulley/drive unit of compressor, replacing**
- Checking and replacing compressor drive unit --> **Compressor drive unit, checking, replacing**

5 - Pressure relief valve, 10 Nm

- Do not remove

6 - Circuit with valve

7 - High Pressure Sensor G65

- Removing and installing --> **High Pressure Sensor G65 , removing and installing**
- Checking signal

8 - Condenser

- Replace O-rings at connections;
- Removing and installing refrigerant lines --> **Refrigerant lines for condenser, removing and installing**
- Removing and installing condenser --> **Condenser, removing and installing**

9 - Closing cap

- With seal
- Reinstall after using service valve

10 - Service connection

- High pressure side
- For service station for measuring, discharging and recharging

11 - Bolt in refrigerant line

- Replace O-ring
- Tightening torque: 15 Nm

12 - Restrictor

- O-ring (7.5 mm/1.5 mm)
- Replace restrictor with O-ring --> **87 - AIR CONDITIONING**
- Removing and installing --> **Restrictor, removing and installing**
- Lubricate O-ring slightly with refrigerant oil before installing restrictor

13 - evaporator

- Replace O-rings at connections;
- Tightening torque: Hexagon nut 25 Nm
- Removing and installing refrigerant line --> **Refrigerant lines on evaporator flange, removing and installing**

- Removing and installing --> **Heating and A/C unit, disassembling and assembling**

14 - Service connection

- Low pressure side

15 - Closing cap

- With seal
- Reinstall after using service valve

16 - Accumulator

- Replace O-rings at connections;
- Tightening torque: Socket-head bolt at block connection 25 Nm
- Removing and installing --> **Accumulator, removing and installing**

Connections of refrigerant lines to the components (different versions)

NOTE:

- **In January 2003, the connections between the refrigerant lines and the various components (condenser, evaporator etc.) were converted from radial/axial sealing to radial sealing (gradual introduction). A further few thousand vehicles were still installed with the old type of connection in April/May 2003.**
- **It is only permissible to combine components with the same type of seal and the corresponding O-rings (different versions) .**
- **Reliable sealing of the joints cannot be ensured if components with different forms of sealing are installed.**
- **Joints with radial/axial seal (installed up to January 2003, gradually discontinued)**

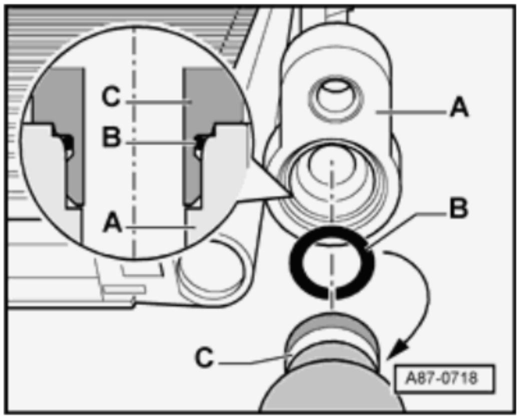

Fig. 160: Identifying O-Ring, Component & Refrigerant Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **Component - A - (e.g. condenser) with connection for radial/axial seal**
- **O-ring - B - for connection with radial/axial seal**
- **Refrigerant line - C - with connection with radial/axial seal**
- **Joints with radial seal (as of January 2003, gradual introduction)**

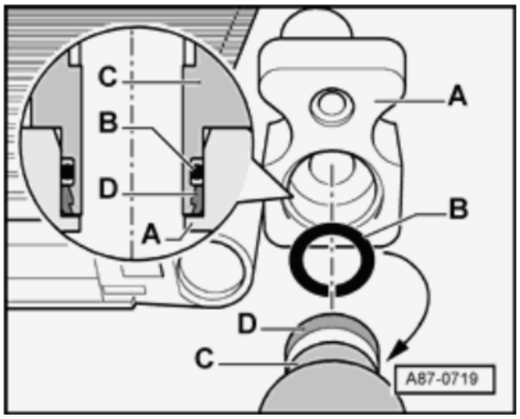

Fig. 161: Identifying Component, O-Ring, Refrigerant Line & Sleeve
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **Component - A - (e.g. condenser) with connection for radial seal**
- **O-ring - B - for connection with radial seal**
- **Refrigerant line - C - with connection with radial seal**
- **Guide sleeve - D - (plastic) at connection with radial seal**

Refrigerant lines on evaporator flange, removing and installing

Disconnecting

- Remove plenum chamber cover.
- Discharge refrigerant circuit --> 87 - AIR CONDITIONING .

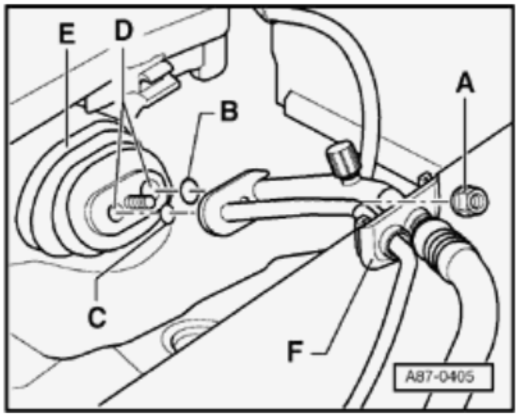

Fig. 162: Refrigerant Lines On Evaporator Flange, Removing/Installing

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove nut - **A** - (tightening torque 25 Nm).
- Remove refrigerant lines from evaporator and seal open connections.

NOTE:

- **Closing cap of replacement evaporator is a suitable means of sealing open connections at evaporator - D - and lines (to prevent dirt and moisture).**

Installing

Install in reverse order, paying attention to the following:

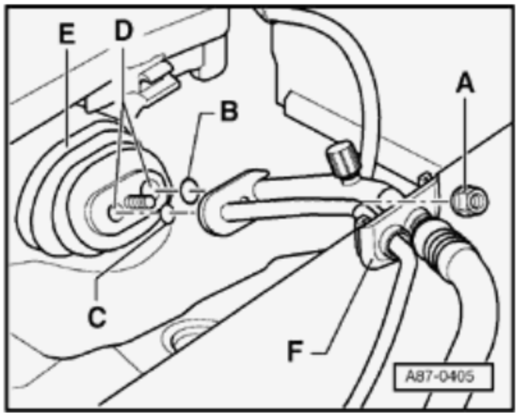

Fig. 163: Refrigerant Lines On Evaporator Flange, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-rings - **B** - and - **C** - ;
- Install refrigerant lines such that they are not strained.
- After installing refrigerant lines, check proper installation of grommet - **E** - and bushing - **F** -.
- Check position of refrigerant lines to evaporator. They must not make contact with other components.
- Check type of seal at connections and refrigerant lines (must be designed for same type of seal) --> **Connections of refrigerant lines to the components (different versions)**
- Evacuate and recharge refrigerant circuit. --> **87 - AIR CONDITIONING**

Refrigerant lines for condenser, removing and installing

Disconnecting

- Discharge refrigerant circuit --> **87 - AIR CONDITIONING** .
- Remove noise insulation -->
  - **50 BODY, FRONT**
  - **50 - BODY - FRONT** for BODY EXTERIOR - CABRIOLET

.

- Remove entire front bumper --> **63 - BUMPERS** for BODY EXTERIOR - CABRIOLET.

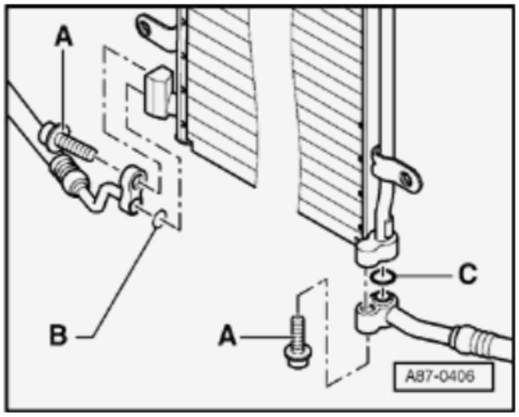

Fig. 164: Refrigerant Lines For Condenser, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** - (tightening torque 20 Nm).
- Remove refrigerant lines from condenser.

NOTE:

- **Seal open lines and connections at condenser with suitable caps (to prevent dirt and moisture).**

Installing

Install in reverse order, paying attention to the following:

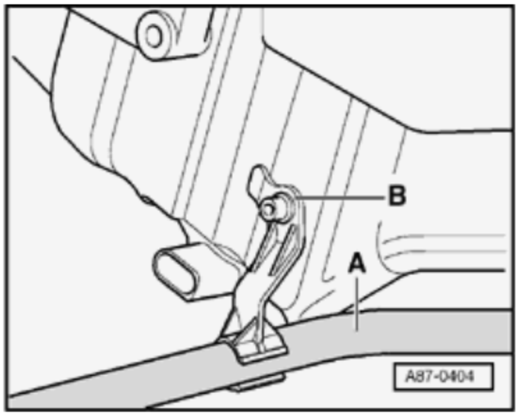

Fig. 165: Identifying Refrigerant Lines & Brackets
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- After attaching, check routing of refrigerant lines - **A** -. They must be inserted in brackets - **B** - provided and not make contact with other components.
- Replace O-rings - **B** - and - **C** - ;
- Check type of seal at connections and refrigerant lines (must be designed for same type of seal) -->

Connections of refrigerant lines to the components (different versions)

- Evacuate and recharge refrigerant circuit. --> **87 - AIR CONDITIONING**

Condenser, removing and installing

NOTE: **Also see RADIATOR, REMOVING AND INSTALLING .**

NOTE:

- **On the Audi RS4, a condenser with a lesser internal volume is installed , therefore note the lower refrigerant R134a capacity for this vehicle --> 87 - AIR CONDITIONING**

Removing

- Discharge refrigerant circuit --> **87 - AIR CONDITIONING** .
- Remove refrigerant lines from condenser --> **Refrigerant lines for condenser, removing and installing**.
- Remove air guides between bumper and condenser.
- If applicable, unfasten or remove power steering cooler (not always necessary, depends on vehicle) --> **48 - STEERING**
- If applicable, unfasten or remove Coolant Fan Control (FC)Control Module J293 (not always necessary, depends on vehicle) -->
  - **19 - ENGINE - COOLING SYSTEM** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **19 - ENGINE - COOLING SYSTEM** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **19 ENGINE - COOLING SYSTEM** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF
- Disconnect connector from High Pressure Sensor G65 - **B** -.

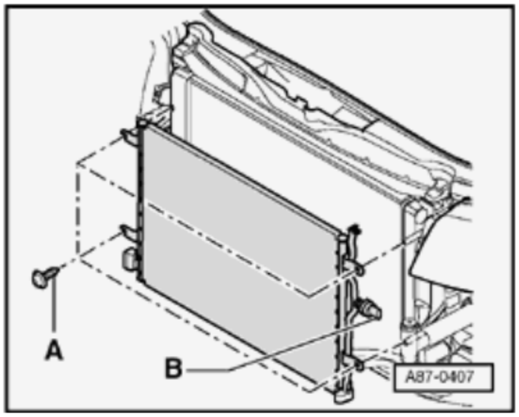

Fig. 166: Disconnecting Connector From High Pressure Sensor G65 & Removing Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** - (tightening torque 5 Nm).

Installing

Install in reverse order.

- Check type of seal at connections and refrigerant lines (must be designed for same type of seal) --> **Connections of refrigerant lines to the components (different versions)**

NOTE:

- **The condenser removed contains refrigerant oil which has to be returned to the refrigerant circuit (together with new condenser). --> 87 - AIR CONDITIONING**

Restrictor, removing and installing

NOTE:

- **Yellow colored restrictors (diameter of bore/constriction 1.54 mm) were installed up to Model Year 2001. Red colored restrictors (diameter of bore/constriction 1.42 mm) were introduced as of Model Year 2002. With this vehicle, the modification to the restrictor does not alter the refrigerant R134a capacity. --> 87 - AIR CONDITIONING**

Removing

- Discharge refrigerant circuit --> **87 - AIR CONDITIONING** .

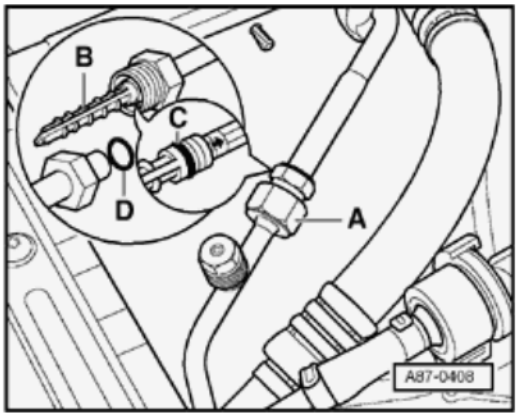

Fig. 167: Restrictor, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove refrigerant line at threaded connection - **A** - (seal open connections).
- Use pointed-nose pliers to pull restrictor - **B** - out of refrigerant line.

Installing

NOTE:

- **Only install restrictors of the same type. Restrictors of different color have different bore diameters --> 87 - AIR CONDITIONING .**

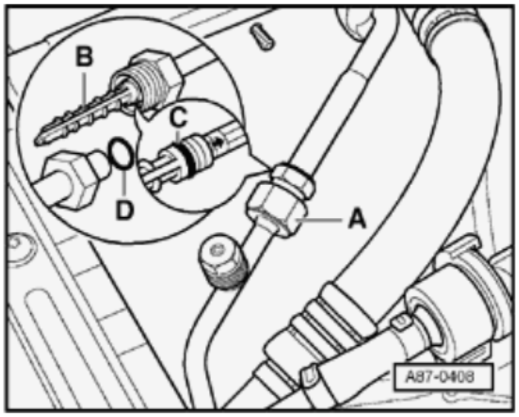

Fig. 168: Restrictor, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Ensure correct positioning of restrictor - **B** - on installation (arrow on restrictor pointing towards evaporator).

- Restrictor must be snugly positioned in refrigerant line

- Check correct positioning of O-ring - **C** - (7.5 mm; 1.5 mm) in groove.
- Replace O-ring - **D** - ;
- Check type of seal at connections and refrigerant lines (must be designed for same type of seal) --> **Connections of refrigerant lines to the components (different versions)**

- Lubricate restrictor O-ring slightly with refrigerant oil before installing.
- Install refrigerant lines such that they are not strained.
- Tighten threaded connection - **A** - to 15 Nm.

NOTE:

- **Check position of refrigerant lines after tightening threaded connection (lines must not make contact with other components).**

- Evacuate and recharge refrigerant circuit. --> **87 - AIR CONDITIONING**

Accumulator, removing and installing

NOTE:

- **On the Audi RS4, a modified accumulator is installed; for this accumulator, the bracket cannot be obtained separately as a replacement part (only together with the accumulator) .**

Removing

- Discharge refrigerant circuit --> **87 - AIR CONDITIONING** .
- Remove entire front bumper --> **63 - BUMPERS** for BODY EXTERIOR - CABRIOLET.
- Move lock carrier to service position -->
  - **50 BODY, FRONT**
  - **50 - BODY - FRONT** for BODY EXTERIOR - CABRIOLET

  .
- If applicable, remove charge air cooler/secondary air pump motor (not always necessary, depends on vehicle) -->
  - **21 - TURBOCHARGER, G-CHARGER** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **21 - TURBOCHARGER, G-CHARGER** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT

  and -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE

MECHANICAL, ENGINE CODE(S): BHF

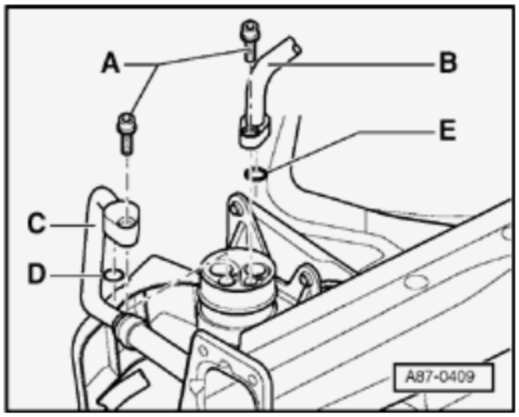

Fig. 169: Removing/Installing Bolts And Refrigerant Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** - and remove refrigerant lines - **B** - and - **C** -.

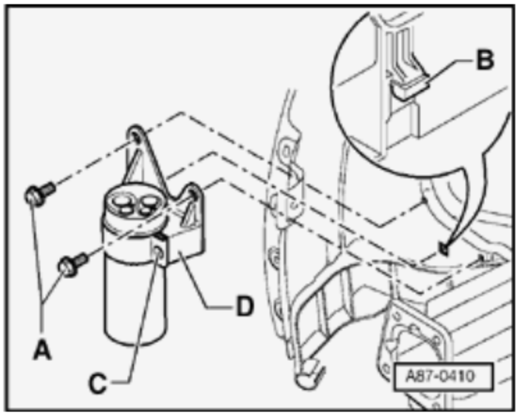

Fig. 170: Identifying Bolts, Accumulator & Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** -.
- Remove lug at bracket for accumulator - **B** - from body.
- Remove accumulator with bracket.
- Loosen bolt - **C** - and pull accumulator out of bracket - **D** -.

NOTE:

- **Seal open line connections.**
- **Connection of refrigerant lines differs depending on engine version .**
- **Keep accumulator closed as long as possible. Only remove caps immediately prior to installation (accumulator contains a desiccant bag which soon becomes saturated with moisture and hence unusable after opening accumulator).**

Installing

Install in reverse order, paying attention to the following:

Before installing accumulator --> **87 - AIR CONDITIONING**

- Check type of seal at connections and refrigerant lines (must be designed for same type of seal) --> **Connections of refrigerant lines to the components (different versions)**

NOTE:

- **Connections at accumulator may be marked "IN" (from evaporator) and "Out" (to compressor).**
- **The accumulator removed contains refrigerant oil, which must be returned to refrigerant circuit (together with new accumulator) --> 87 - AIR CONDITIONING .**
- **Adjustment of the oil quantity depends on the nature of the complaint. If, for example, a accumulator has been damaged in an accident (no loss of refrigerant, no ingress of moisture and dirt into refrigerant circuit), the air conditioner can be serviced by weighing the old and new accumulator without the need for extensive repair work. Pour refrigerant oil into the new accumulator until it weighs the same as the removed. --> 87 - AIR CONDITIONING .**
- **If an indeterminate amount of refrigerant oil has escaped or dirt and moisture have entered into the refrigerant circuit, it must be cleaned using compressed air and nitrogen. --> 87 - AIR CONDITIONING**

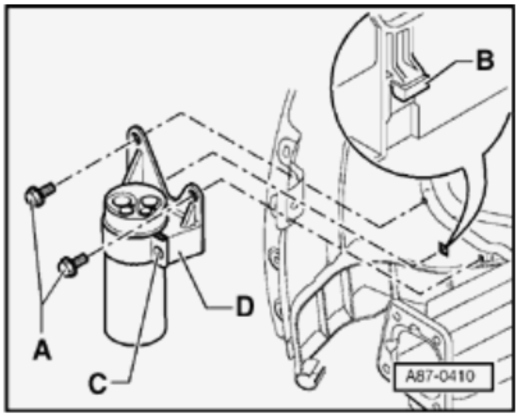

Fig. 171: Identifying Bolts, Accumulator & Bolt
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Insert in bracket - **D** -.
- Engage bracket - **D** - with lug - **B** -.
- Insert and tighten bolts - **A** - (tightening torque 8 Nm).

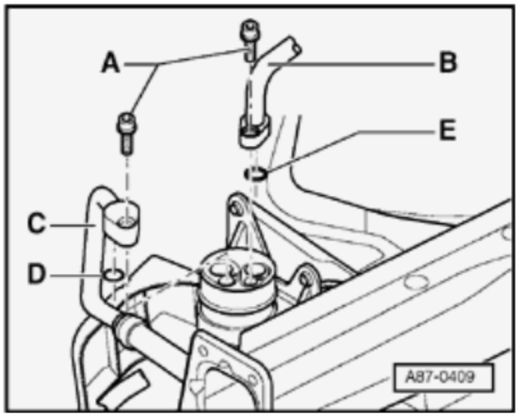

Fig. 172: Removing/Installing Bolts And Refrigerant Lines
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-rings - **D** - ;
- Turn the accumulator such that the two refrigerant lines - **B** - and - **C** - can be inserted without strain in the accumulator. In doing so, pay attention to correct assignment of connections.
- Use bolt - **A** - to attach refrigerant line to accumulator (tightening torque 25 Nm). Use oil filter strap for example to secure accumulator to prevent it turning.
- Tighten bolt - **C** - (tightening torque 8 Nm).

- Reinstall remaining components removed.
- Discharge and recharge refrigerant circuit. --> **87 - AIR CONDITIONING**

A/C refrigerant system, capacities

For refrigerant R134a and refrigerant oil capacities, refer to --> **87 - AIR CONDITIONING**

NOTE:

- **Always fill the refrigerant circuit as far as the upper tolerance limit (some refrigerant remains in the filler hoses).**
- **The refrigerant circuit is only to be filled with approved refrigerant oils .**
- **On the Audi RS4, a condenser with a lesser internal volume is installed , therefore note the lower refrigerant R134a capacity for this vehicle --> 87 - AIR CONDITIONING**
- **Different refrigerant oils are specified for "Zexel" , "Sanden" and "Denso" compressors --> 87 - AIR CONDITIONING .**
- **The refrigerant oil "G 052 300 A2" is currently to be used for "Denso" compressors --> 87 - AIR CONDITIONING .**
- **Refrigerant oil (PAG oil) from containers which have been open for a long time absorb moisture and is no longer to be used.**
- **For further information, refer to --> 87 - AIR CONDITIONING**

COMPRESSOR, REMOVING AND INSTALLING

Refrigerant lines on compressor, removing and installing

NOTE:

- **The compressor is always driven when the engine is running; there is no A/C clutch. The engine is therefore not to be started unless the refrigerant circuit has been properly assembled. If, for example, the refrigerant lines have not been connected to the compressor, heat generation inside the compressor with the engine running may lead to destruction of the compressor.**
- **The following illustrations show a compressor installed to the right of the engine. The refrigerant lines are to be removed in the same manner for compressors installed to the left of the engine. These engines are however not installed at present with a bracket for the refrigerant lines.**
- **Seal open lines and connections at compressor with suitable caps (to prevent dirt and moisture).**
- **On vehicles with 8-cyl. engine, certain preparatory work is required to make the refrigerant lines accessible for removing --> Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine).**

Removing

- Discharge refrigerant circuit --> **87 - AIR CONDITIONING** .
- Remove noise insulation -->
  - **50 BODY, FRONT**
  - **50 - BODY - FRONT** for BODY EXTERIOR - CABRIOLET

  .
- Remove front bumper (not always necessary, depends on vehicle) --> **63 - BUMPERS** for BODY EXTERIOR - CABRIOLET.
- Move lock carrier to service position -->
  - **50 BODY, FRONT**
  - **50 - BODY - FRONT** for BODY EXTERIOR - CABRIOLET

  .
- If applicable, remove charge air cooler/secondary air pump motor (not always necessary, depends on vehicle) -->
  - **21 - TURBOCHARGER, G-CHARGER** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **21 - TURBOCHARGER, G-CHARGER** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT

  and -->
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 2.0 LITER 4-CYL. 4V TURBO

ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
- **26 EXHAUST SYSTEM, EMISSION CONTROLS** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
- **26 - EXHAUST SYSTEM, EMISSION CONTROLS** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

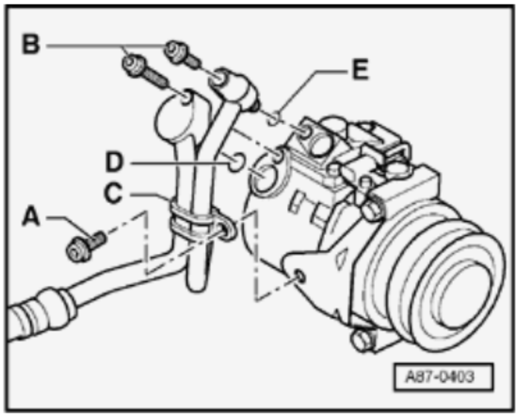

Fig. 173: Refrigerant Lines On Compressor, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolt - **A** - (only installed at present with compressor installed to right of engine).
- Remove bolts - **B** -.

Installing

Install in reverse order, paying attention to the following:

- Check type of seal at connections and refrigerant lines (must be designed for same type of seal) --> **Connections of refrigerant lines to the components (different versions)**

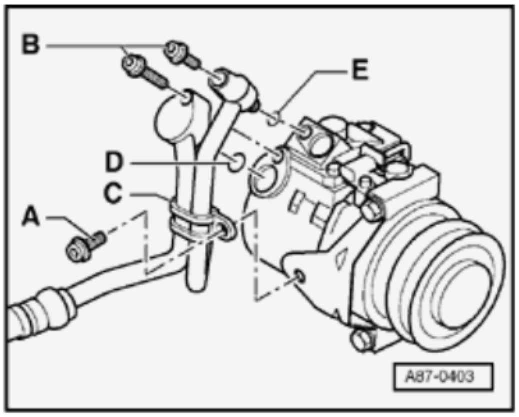

Fig. 174: Refrigerant Lines On Compressor, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Replace O-rings - **D** - and - **E** - ;
- Tighten bolts - **B** - to 25 Nm.
- Tighten bolt - **A** - to 25 Nm.

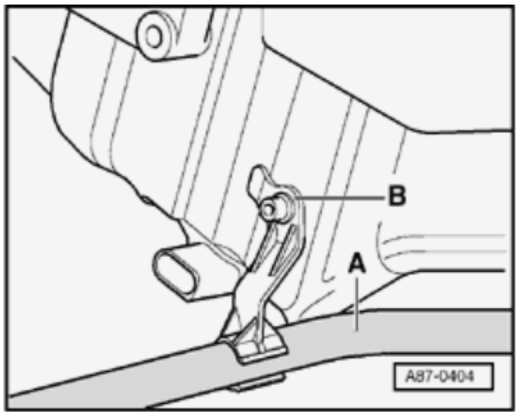

Fig. 175: Identifying Refrigerant Lines & Brackets
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Tighten bolts - B - and then secure clip - C - with bolt - A -.**
- **Use must not be made of O-rings from caps of replacement compressor connections.**
- **After attaching, check routing of refrigerant lines - A -. They must be inserted in brackets - B - provided and not make contact with other components.**

Compressor, removing and mounting (vehicles with 4 or 6-cyl. engine)

Removing (belt-driven compressor)

- Discharge refrigerant circuit --> **87 - AIR CONDITIONING** .
- Remove refrigerant lines from compressor --> **Refrigerant lines on compressor, removing and installing**.
- Remove compressor from bracket --> **Compressor, removing and installing from bracket**.

Installing

Install in reverse order, paying attention to the following:

- Check type of seal at connections and refrigerant lines (must be designed for same type of seal) --> **Connections of refrigerant lines to the components (different versions)**

Before installing compressor --> **87 - AIR CONDITIONING**

NOTE:

- **The compressor removed contains an indeterminate amount of refrigerant oil. Attention is therefore to be paid to notes on compressor replacement. --> 87 - AIR CONDITIONING**

- For tightening torques and O-rings, refer to --> **Compressor, removing and installing from bracket** and --> **Refrigerant lines on compressor, removing and installing**.
- Reinstall remaining components removed.
- Evacuate and recharge refrigerant circuit. --> **87 - AIR CONDITIONING**
- Start up air conditioner after mounting compressor --> **A/C system, running after mounting compressor**

Compressor, removing and installing (vehicles with 8 cyl. engine)

Removing (compressor driven via a shaft)

- Discharge refrigerant circuit --> **87 - AIR CONDITIONING** .
- Use flexible oil extractor V.A.G 1358/A to draw off power steering hydraulic fluid from.

CAUTION: Hot vapor or hot coolant may escape on opening reservoir. Cover cap with cloth and open carefully.

- Loosen cap of coolant reservoir.
- Unbolt front left wheel.

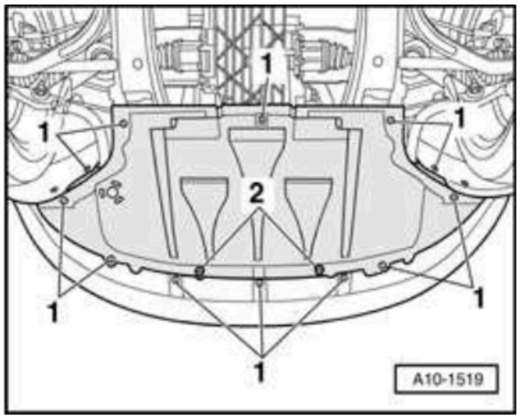

Fig. 176: Removing Quick-Release Fasteners, Screws And Noise Insulation
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen quick-release fasteners - **1** - , screw out bolts - **2** - and remove noise insulation.
- Remove front bumper --> **63 - BUMPERS** for BODY EXTERIOR - CABRIOLET.

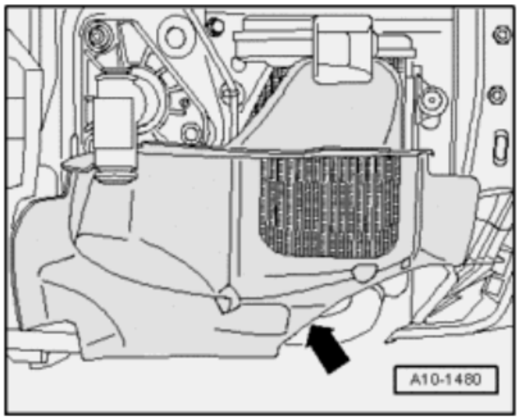

Fig. 177: Removing Left Air Guide In Front Of Auxiliary Cooler
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left air guide - **arrow** - in front of auxiliary cooler.

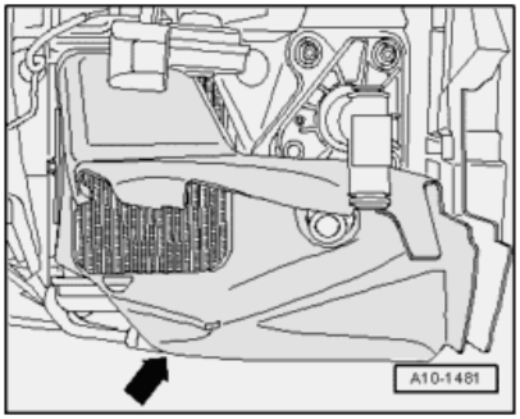

Fig. 178: Removing Right Air Guide In Front Of Auxiliary Cooler
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove right air guide - **arrow** - in front of auxiliary cooler.
- Place drip tray V.A.G 1306 beneath engine.

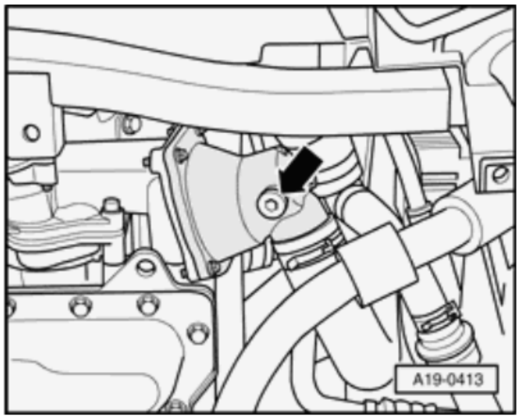

Fig. 179: Removing Drain Plug On Coolant Thermostat Housing

Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove drain plug - **arrow** - at housing for thermostat and drain off coolant at engine.

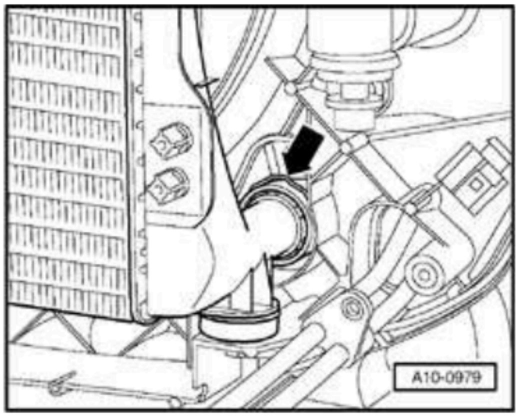

Fig. 180: Removing Coolant Hose At Bottom Of Radiator And Draining Off Remaining Coolant
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose at bottom of radiator - **arrow** - and drain off remaining coolant.
- Place oil drip tray beneath hydraulic lines to rear cooling line.

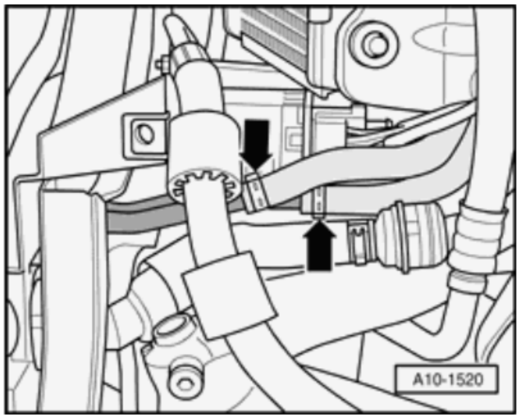

Fig. 181: Disconnecting Hydraulic Lines To Rear Cooling Line At Lock Carrier
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect hydraulic lines to rear cooling line at lock carrier - **arrows** -.

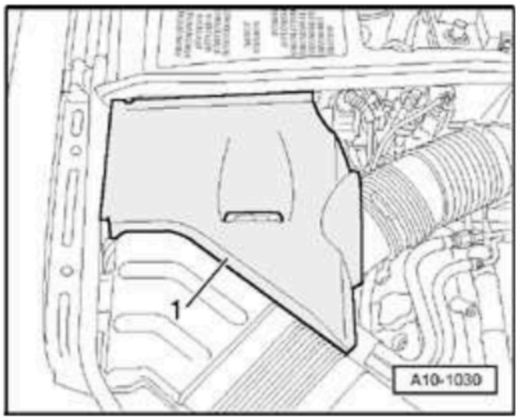

Fig. 182: Removing Cover In Engine Compartment (Right Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover - **1** - on right of engine compartment.

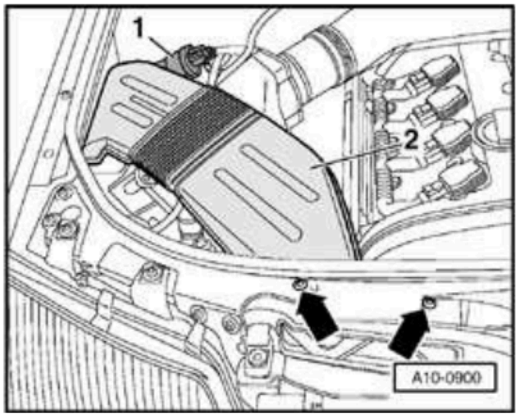

Fig. 183: Evaporative Emission Canister Purge Regulator Valve N80 And Air Duct
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disengage Evaporative Emission (EVAP) Canister Purge Regulator Valve N80 - **1** - at air guide.
- Remove bolts - **arrows** -.
- Remove air guide - **2** -.

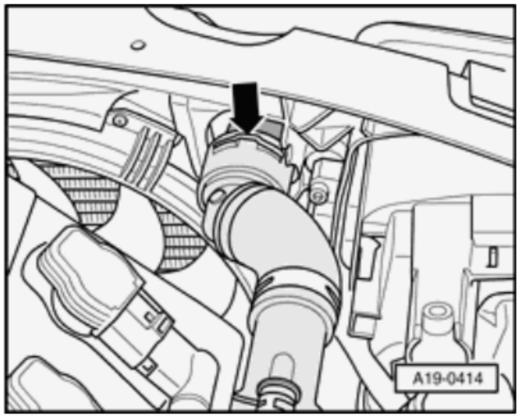

Fig. 184: Disconnecting Top Coolant Hose From Radiator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose at top - **arrow** - of radiator.

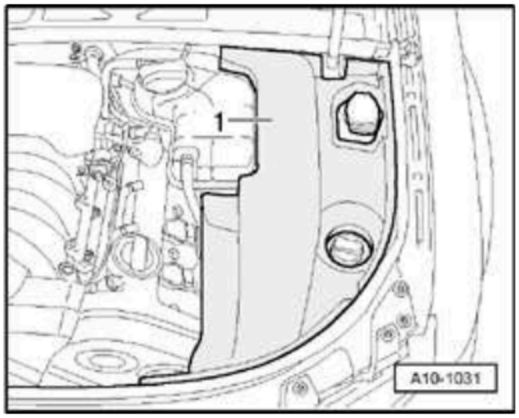

Fig. 185: Removing Cover In Engine Compartment (Left Side)
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove cover - **1** - on left of engine compartment.

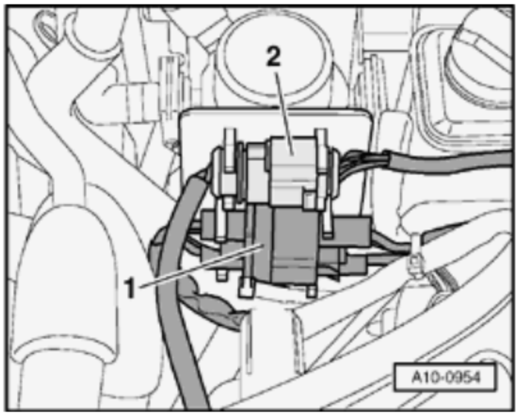

Fig. 186: Removing Electrical Harness Connectors And From Bracket
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove connectors - **1** - and - **2** - from bracket and disconnect.
- Expose bare wires to lock carrier.

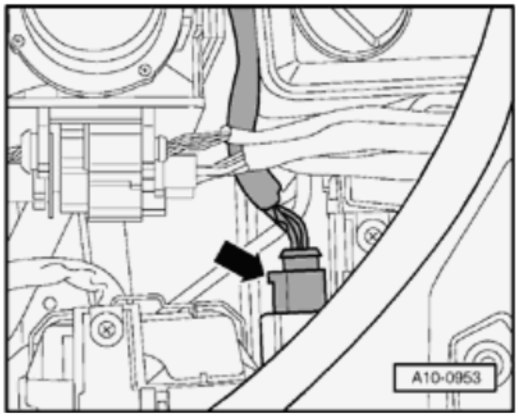

Fig. 187: Disconnecting Connector For Headlights On Both Sides Of Vehicle
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **arrow** - for headlights on both sides of vehicle.

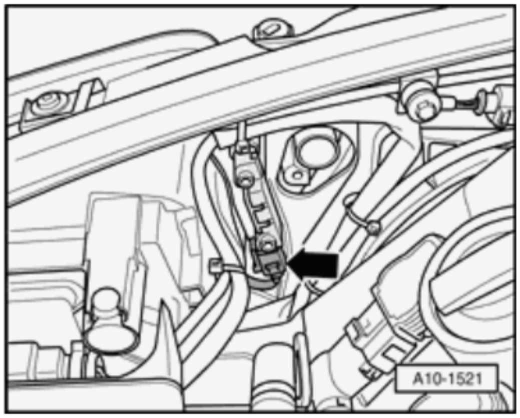

Fig. 188: Disconnecting Electrical Harness Connector For Left/Right Airbag Sensors On Lock Carrier
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **arrow** - for airbag sensors on left and right of lock carrier.
- Expose bare wires.
- Remove hood cable at lock carrier -->
  - **55 HOOD, LIDS**
  - **55 - HOOD, LIDS** for BODY EXTERIOR - CABRIOLET

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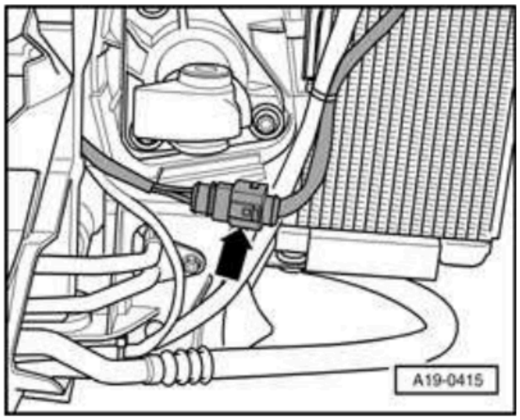

Fig. 189: Disconnecting Connector For Fan On Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **arrow** - for fan on right.

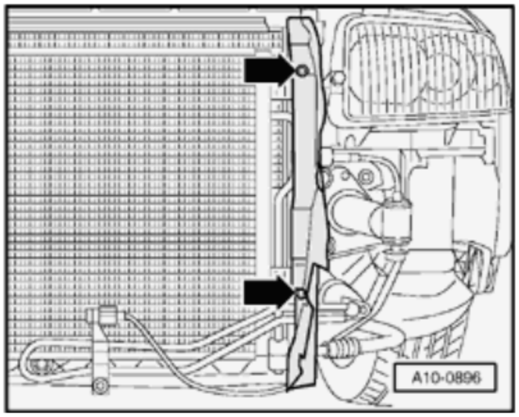

Fig. 190: Unbolting Air Guides On Left/Right Of Radiator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt air guides on left and right of radiator - **arrows** -.

NOTE:	• **To avoid damaging condenser and refrigerant lines/hoses, make sure lines and hoses are not strained, kinked or bent.**

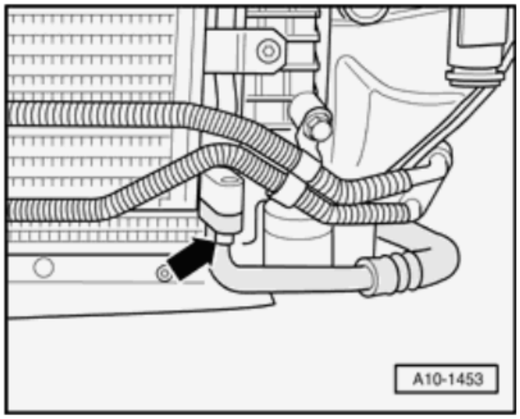

Fig. 191: Unbolting refrigerant line - arrow - to air conditioner compressor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt refrigerant line - **arrow** - to air conditioner compressor.

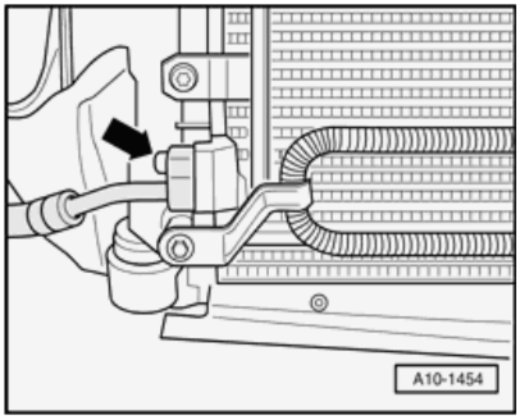

Fig. 192: Unbolt Refrigerant Line To Air Conditioner Evaporator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt refrigerant line - **arrow** - to air conditioner evaporator.

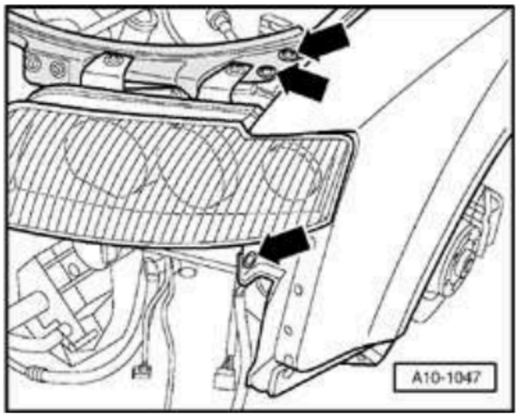

Fig. 193: Removing Bolts At Lock Carrier On Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **arrows** - at lock carrier on left and right.
- Pull off hood seal at lock carrier and wing flanges.

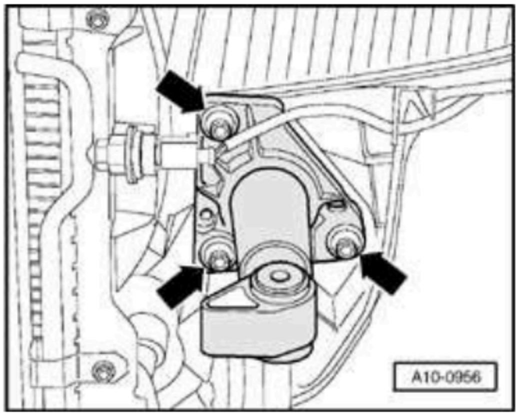

Fig. 194: Removing Bolts At Impact Absorbers At Left/Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts at impact absorbers - **arrows** - on left and right.

NOTE:
- **A second technician is required to remove the lock carrier.**

- Remove lock carrier and set down such that it cannot fall over.

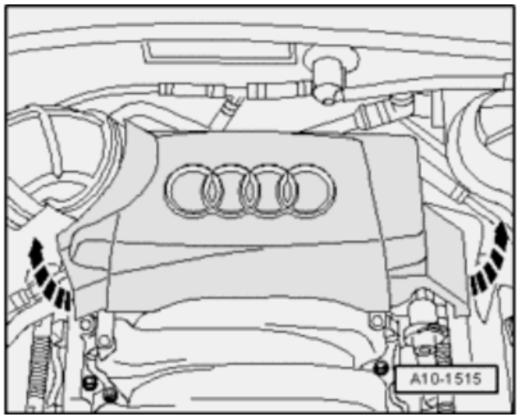

Fig. 195: Removing Rear Engine Cover
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove rear engine cover - **arrows** -.

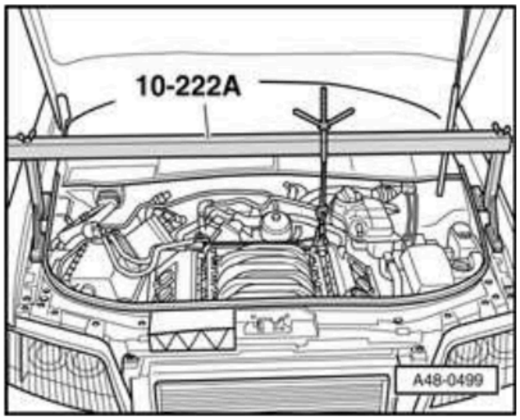

Fig. 196: Positioning Support Bridge 10-222 A On Bolted Fender Edges
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place support bar 10 - 222 A on wing mounting flanges.
- Engage hook of support bar in engine lifting eye.
- Use spindle of support bar to slightly pre-tension engine (do not raise).

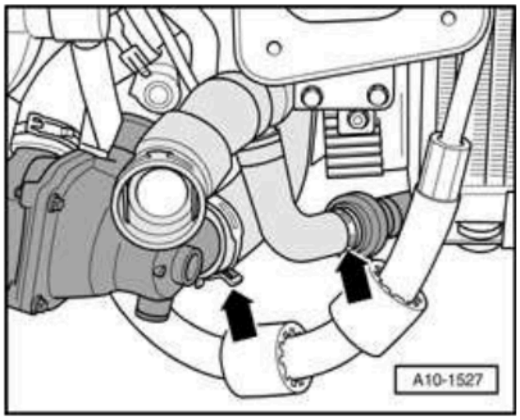

Fig. 197: Removing Coolant Hoses At Locations Marked
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hoses at locations marked with arrows.

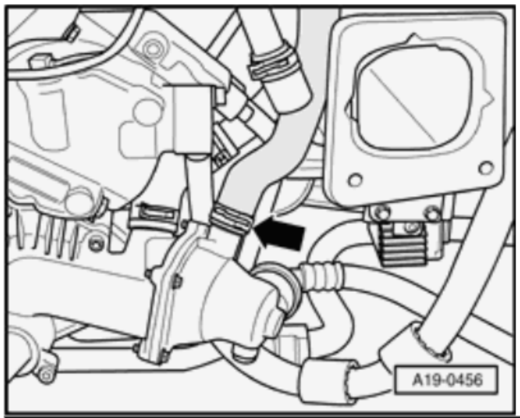

Fig. 198: Removing Coolant Hose At Housing For Thermostat
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove coolant hose at housing for thermostat - **arrow** -.

CAUTION: Take care not to kink or bend refrigerant lines.

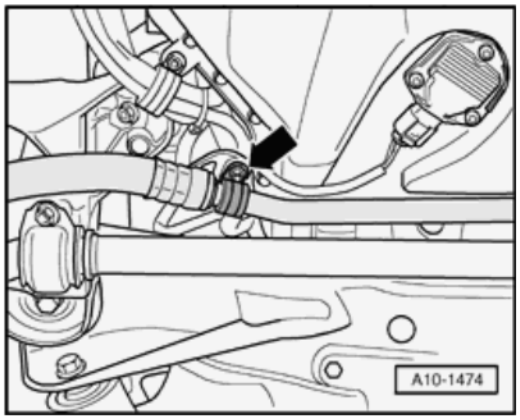

Fig. 199: Unbolting Retaining Clip For Refrigerant Line At Bracket On Right
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt retaining clip - **arrow** - for refrigerant line at bracket on right.

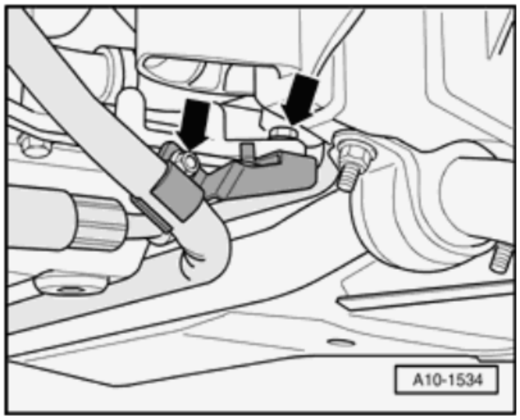

Fig. 200: Unbolting Left Bracket For Refrigerant Line
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt left bracket for refrigerant line - **arrows** -.

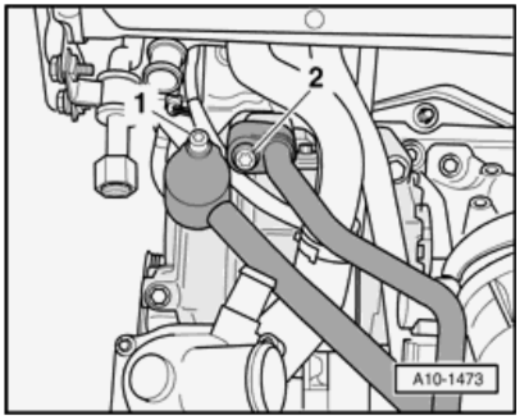

Fig. 201: Removing Bolts & Right Refrigerant Line From A/C Compressor
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1** - and - **2** -.
- Remove refrigerant lines from air conditioner compressor and seal open connections --> **Refrigerant lines on compressor, removing and installing**.

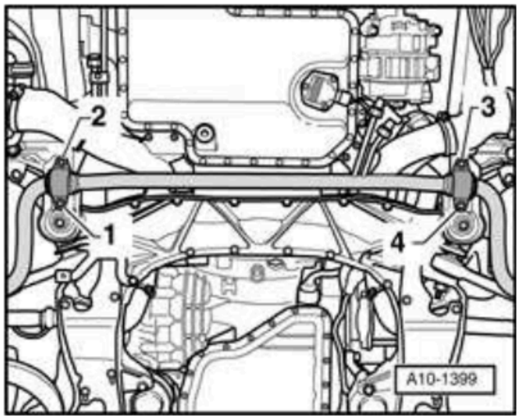

Fig. 202: Removing Nuts For Left/Right Stabilizer Mounts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt nuts - **1 to 4** - for anti-roll bar mount on left and right.

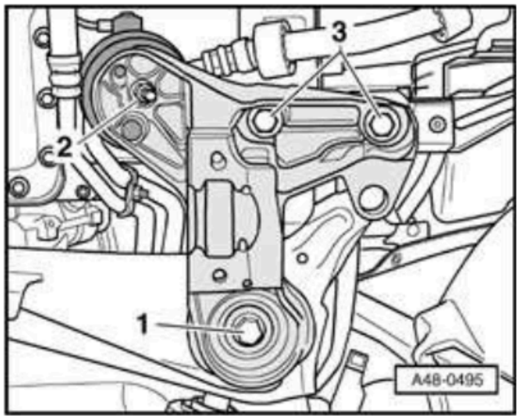

Fig. 203: Unbolting Nut, Removing Bolts And Engine Bracket On Left
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt nut - **2** -.
- Remove bolts - **1** - and - **3** - and remove engine bracket on left.

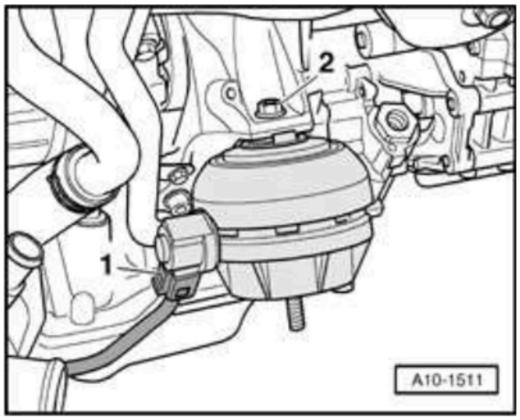

Fig. 204: Disconnecting Electrical Connector, Removing Nut And Engine Mount
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Disconnect connector - **1** - at engine mounting on left.
- Unbolt nut - **2** - and remove engine mounting.

NOTE:
- **Shown with engine removed in illustration.**

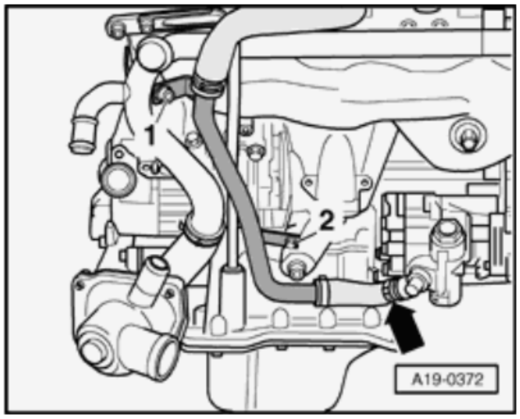

Fig. 205: Removing Bolts & Return Line From Power-Steering Pump
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **1** - and - **2** -.

NOTE:
- **To stop fluid escaping, leave hose - arrow - connected to power steering.**

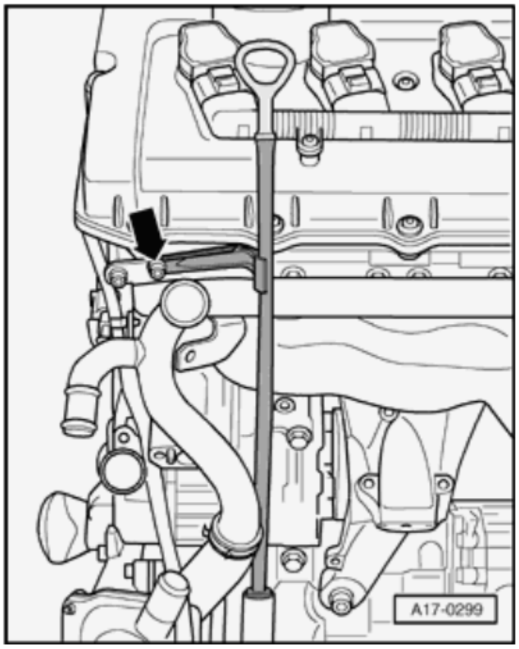

Fig. 206: Removing Bolt From Oil Dipstick Guide Tube At Cylinder Head
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Unbolt guide tube for dipstick at cylinder head - **arrow** - and lift it off.

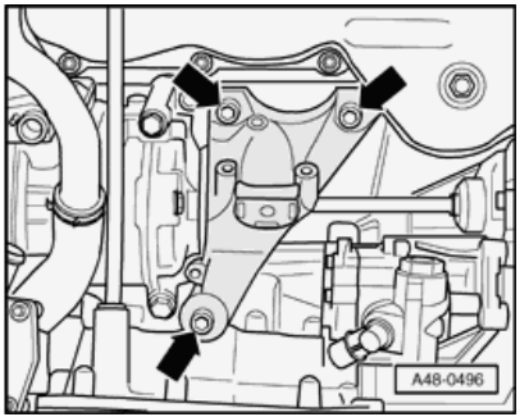

Fig. 207: Removing Left Engine Support
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove left engine support - **arrows** -.

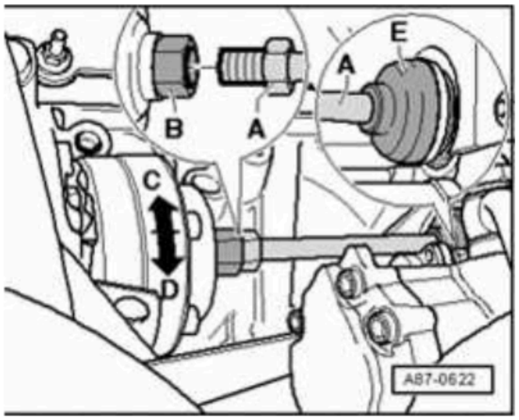

Fig. 208: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Use open-ended wrench to hold compressor drive shaft - **A** - in position and turn compressor drive unit - **B** - in direction of arrow - **C** -.

NOTE:

- **Drive shaft - A - must not be turned.**
- **After loosening threaded connection, drive shaft - A - can be pushed through socket - E - into drive pinion.**

- Disconnect 2-pin connector to A/C Compressor Regulator Valve N280.

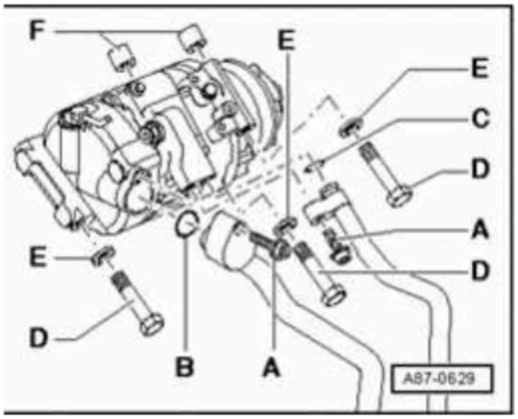

Fig. 209: Identifying Bolts & Bushings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **D** - (tightening torque 25 Nm).
- Remove compressor towards front
- If necessary, remove bushings - **F** - from compressor.

Installing

Before installing compressor --> **87 - AIR CONDITIONING**

NOTE:

- **The compressor removed contains an indeterminate amount of refrigerant oil. Attention is therefore to be paid to notes on compressor replacement --> 87 - AIR CONDITIONING .**

- Install compressor drive shaft (in drive pinion) and check both proper attachment and corresponding socket --> **Compressor drive shaft, removing and installing**.

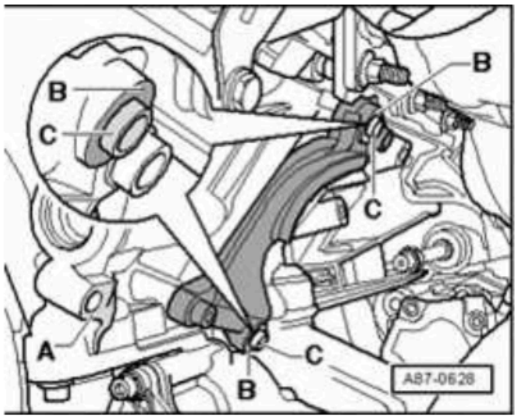

Fig. 210: Identifying Bushings & Contact Surfaces
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- If necessary, remove bushings - **C** - from compressor bracket.
- Thoroughly clean contact surfaces - **A** - and - **B** - at bracket (as well as contact surfaces at compressor).
- Fit bushings - **C** - in compressor bracket.

NOTE:

- **Pay attention to correct positioning of bushings - C - as well as clean contact surfaces. Incorrectly installed bushings or dirty/damaged contact surfaces could lead to misalignment between compressor and engine. In the course of operation, misalignment results in drive shaft or compressor damage.**

- Check type of seal at connections and refrigerant lines (must be designed for same type of seal) --> **Connections of refrigerant lines to the components (different versions)**

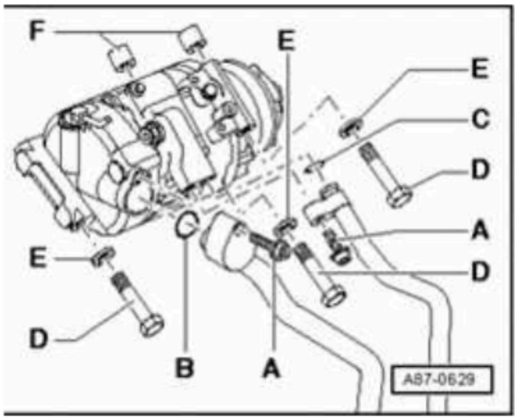

Fig. 211: Identifying Bolts & Bushings
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Install compressor with bolts - **D** - (and washers - **E** -) to bracket (tightening torque 25 Nm).
- Install refrigerant lines to compressor (tightening torque of bolts - **A** - 25 Nm). For dimensions of O-rings - **B** - and - **C** - and further information, refer to --> **Refrigerant lines on compressor, removing and installing**.

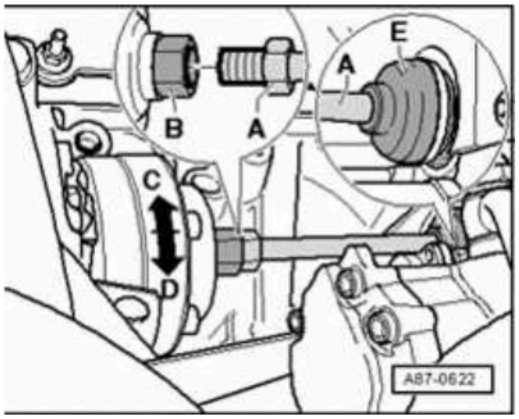

Fig. 212: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- After installation of a new compressor or after adding fresh refrigerant oil to compressor (e.g. after blowing out refrigerant circuit), give compressor approx. 10 turns by hand by way of compressor drive unit - **B** - in direction of arrow - **C** - before tightening drive shaft so as to avoid compressor damage.
- Tighten drive shaft. Use open-ended wrench to hold compressor drive shaft - **A** - in position and turn compressor drive unit - **B** - in direction of arrow - **D** - (tightening torque 60 Nm).

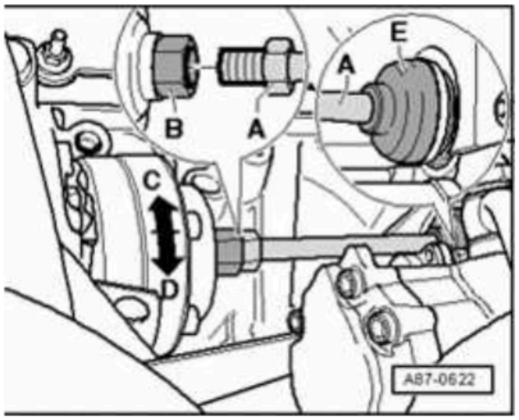

Fig. 213: Using Open-Ended Wrench To Hold Compressor Drive Shaft In Position And Turning Compressor Drive Unit
Courtesy of VOLKSWAGEN UNITED STATES, INC.

NOTE:

- **Drive shaft - A - must not be turned.**
- **After installing drive shaft - A - , check installation position of socket - E -.**

- Reinstall remaining components removed.
- Evacuate and fill refrigerant circuit. --> **87 - AIR CONDITIONING**
- Start up air conditioner after mounting compressor --> **A/C system, running after mounting compressor**

A/C system, running after mounting compressor

- After installation of a new compressor or after adding fresh refrigerant oil to the compressor (e.g. after blowing out refrigerant circuit), give compressor approx. 10 turns by hand after installing and prior to initial start-up of engine (before installing belt or tightening drive shaft) to prevent compressor damage.
- Assemble refrigerant circuit before starting engine.
- Only start engine with refrigerant circuit full if at all possible.

NOTE:

- **Different compressors depending on country version, production period and engine --> Refrigerant system, servicing**
- **The compressor is always driven (by pulley or via drive shaft by engine); there is no A/C clutch.**
- **The compressor is equipped with an "internal oil circuit" to prevent damage if the refrigerant circuit is empty. This internal lubrication is only possible if there is still a residual quantity of refrigerant oil in the compressor.**
- **The engine must not be started unless the refrigerant circuit has been properly assembled. If, for example, the refrigerant lines have not been connected to the compressor, heat generation inside the compressor with the engine running may lead to destruction of the compressor.**

- **The A/C Compressor Regulator Valve N280 is not activated if the refrigerant circuit is empty and the compressor runs at idle with the engine. However, as there is no refrigerant available, the refrigerant oil required for compressor lubrication is not conveyed. Compressor lubrication is maintained by way of an "internal oil circuit" to prevent damage.**
- **If the engine has to be started when the refrigerant circuit is empty:**
- **- Refrigerant circuit must have been fully assembled.**
- **- Compressor must contain at least a quarter of the amount of refrigerant oil specified for this refrigerant circuit.**
- **- Engine speed must not exceed 2500 RPM.**
- **- Engine should not be left running for longer than is absolutely necessary.**

Pay attention to the following on starting engine for the first time after charging refrigerant circuit:

- Start engine with compressor switched off ("ECON" mode) and wait for idling speed to stabilize.
- Open instrument panel vents.
- On operating and display module, Climatronic Control Module J255 , select "Lo" temperature setting for drivers and front passengers side.
- Then switch on compressor ("Auto" mode) and allow it to run for at least 5 minutes with engine idling.

HEATING AND A/C UNIT, REMOVING AND INSTALLING

Special tools and equipment

- Hose Clamps, Up To 40 mm. 3093 or Hose Clamps Up To 25mm Dia. 3094
- Commercially available compressed-air gun
- Cooling system tester V.A.G 1274/(with hand pump and appropriate adapters)

Removing

- Remove plenum chamber cover.
- Discharge refrigerant circuit --> **87 - AIR CONDITIONING** .
- Disconnect and remove Battery A -->
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL**
  - **27 BATTERY, STARTER, GENERATOR, CRUISE CONTROL** for ELECTRICAL EQUIPMENT, CABRIOLET

.

NOTE:

- **If necessary, obtain radio anti-theft code before disconnecting Battery A.**
- **On vehicles with electrically adjustable seats, move seats to rearmost**

position before disconnecting Battery A.

- **On removal, note down bolt lengths and assignment for reinstallation.**
- **All cable ties and other wiring harness fasteners released or cut open on removing air conditioner are to be reinstalled in same position on installation.**

- Dissipate pressure in coolant circuit by opening cap at coolant reservoir. -->
    - **19 - ENGINE - COOLING SYSTEM** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
    - **19 - ENGINE - COOLING SYSTEM** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
    - **19 ENGINE - COOLING SYSTEM** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
    - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
    - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
    - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

CAUTION:

- **On vehicles equipped with Audi Telematics by OnStar, switch-off the emergency (back-up) battery for the Telematic/Telephone Control Module prior to disconnecting the vehicle battery. Switch-on the emergency (back-up) battery after reconnecting the vehicle battery -->**
    - **91 - COMMUNICATION**
    - **91 RADIO, TELEPHONE, NAVIGATION, TRIP COMPUTER for COMMUNICATION, CABRIOLET**

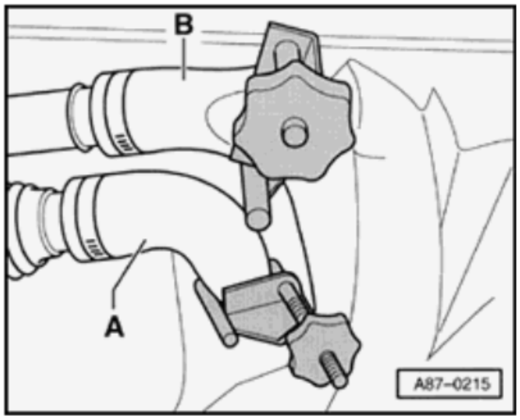

Fig. 214: Identifying Coolant Hoses
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Mark positions of coolant hoses - **A** - and - **B** -.
- Pinch off both coolant hoses to heater core of air conditioner (e.g. using Hose Clamps Up To 25mm Dia. 3094) and remove hoses.

NOTE:

- **Make sure coolant hoses are correctly connected:**
- **- Coolant hose - A - supply from cylinder head**
- **- Coolant hose - B - return to water pump**
- **- Bleeding coolant circuit -->**
    - **19 - ENGINE - COOLING SYSTEM for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB**
    - **19 - ENGINE - COOLING SYSTEM for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT**
    - **19 ENGINE - COOLING SYSTEM for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN**
    - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
    - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS**
    - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF**

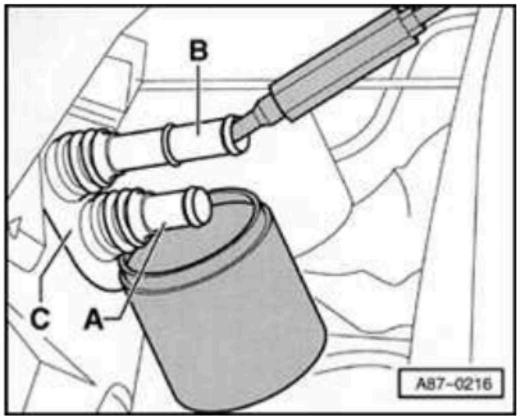

Fig. 215: Identifying Connections & Grommet
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Place container beneath connection - **A** -.
- Install section of tubing to connection - **B** - and use a compressed-air gun to carefully blow the coolant out of the heater core (into the container).
- Remove grommet - **C** -.
- Remove refrigerant lines to evaporator --> **Refrigerant lines on evaporator flange, removing and installing** and secure them (e.g. with cable tie) such that they do not impede installation.

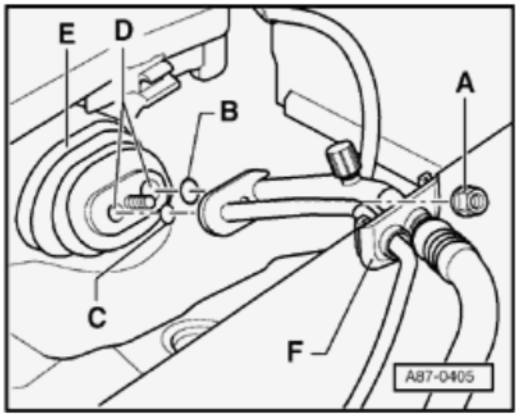

Fig. 216: Refrigerant Lines On Evaporator Flange, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove grommet - **E** -.

NOTE:

- **Seal open line connections.**
- **A cap from a replacement evaporator, for example, is suitable for sealing the open connections at the evaporator.**

- Place protective covers over drivers and front passengers seats.
- Remove glove compartment, drivers storage compartment, center console and instrument panel -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

NOTE:

- **So as not to damage the instrument panel fascia, the instrument panel is only to be placed on a clean workbench covered with clean cardboard.**

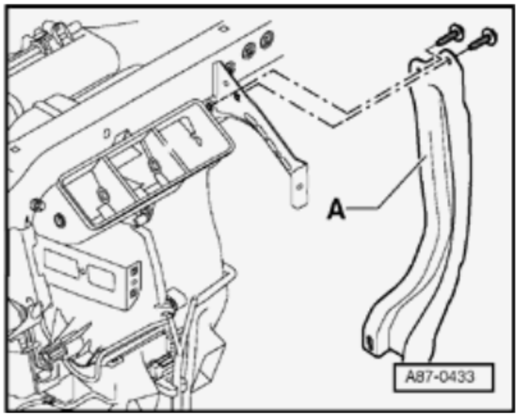

Fig. 217: Removing Support For Instrument Panel Cross Member
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove brace - **A** - for instrument panel cross member (on passengers side at transmission tunnel). -->

  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET
- Remove accelerator pedal module --> **20 - FUEL SUPPLY SYSTEM** .

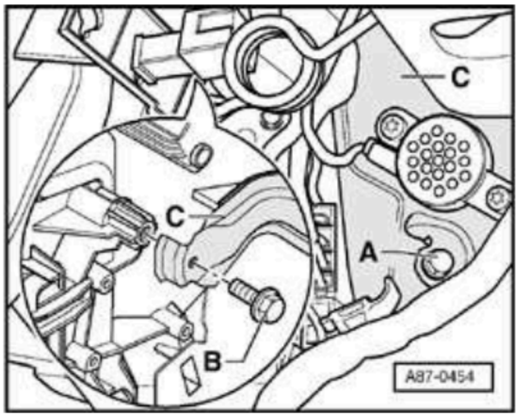

Fig. 218: Removing Bolts Between Support And Air Conditioner
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** - and - **B** - between support - **C** - and air conditioner.
- Remove support - **C** - for instrument panel cross member (on drivers side at transmission tunnel) -->
  - **68 - INTERIOR EQUIPMENT**
  - **68 - INTERIOR EQUIPMENT** for BODY INTERIOR - CABRIOLET

  .
- Remove front footwell vent --> **Footwell vents front, removing and installing**.
- Remove mounting bracket for brake pedal (and clutch pedal) from instrument panel cross member. --> **46 - BRAKES - MECHANICAL COMPONENTS**

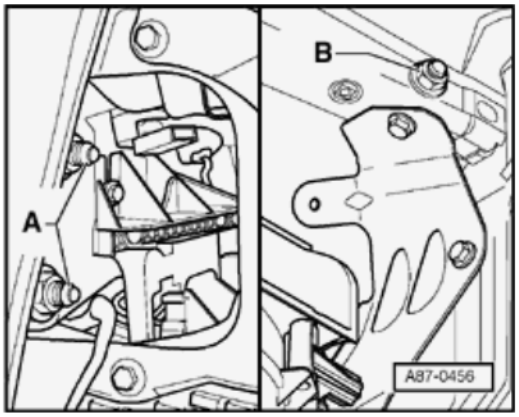

Fig. 219: Defroster Outlet Vent Intermediate Piece For Front Windshield, Removing/Installing
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen hex nuts - **A** - for instrument panel cross member on left and screw out by approx. 15 mm. -->
  - **70 - INTERIOR TRIM**

  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET
- Remove hex nuts - **B** - for instrument panel cross member on right -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET

.

- Remove connecting bolts between instrument panel cross member and windshield cross member (in passenger compartment) as well as connecting bolts between instrument panel cross member and plenum chamber (between electronics box and windshield cross member in plenum chamber). -->
  - **70 - INTERIOR TRIM**
  - **70 - INTERIOR TRIM** for BODY INTERIOR - CABRIOLET
- Carefully pull instrument panel cross member to rear until it makes contact with nuts on left and is still resting on stud on right.

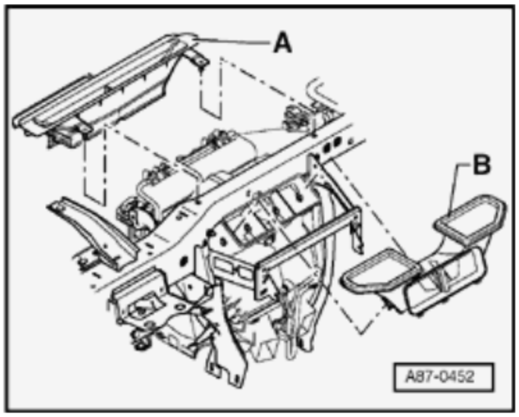

Fig. 220: Removing Intermediate Piece For Defroster Channel And Air Guide To Center Instrument Panel Vents
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove intermediate piece for defroster channel - **A** - and air guide to center instrument panel vents - **B** -.
- Remove evaporator from air conditioner --> **Evaporator housing drain, removing and installing**.
- Remove fasteners of vehicle wiring harness (with cable ties) at air conditioner.
- Disconnect all connectors between vehicle wiring harness and electrical components at air conditioner.

NOTE:
- **The "air conditioner" wiring harness is removed with the air conditioner.**

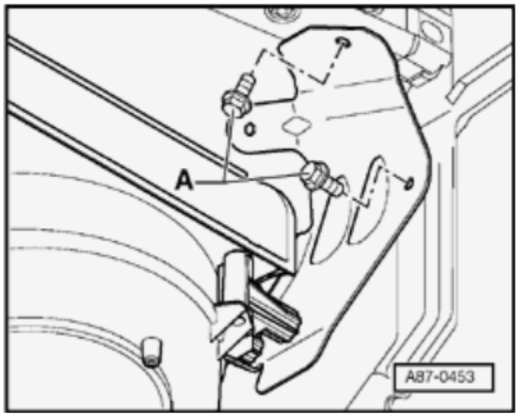

Fig. 221: Removing Air Conditioner Bolts
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Remove bolts - **A** -.

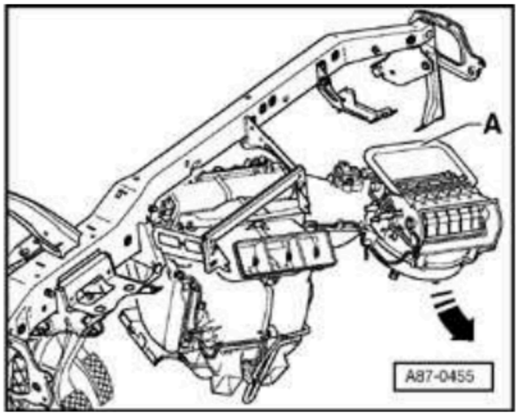

Fig. 222: Take Out Air Conditioner Towards Passengers Side
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Take out air conditioner - **A** - towards passengers side.

NOTE:	**When removing air conditioner, pay attention to both coolant lines to heater core to ensure that they do not catch on opening to plenum chamber or on noise insulation mat and become bent.** **Pay attention to wiring harness. Pulling too firmly could damage individual wires.**

Installing

Install in reverse order, paying attention to the following:

- Check all seals at air conditioner for damage prior to installation and replace damaged seals.
- Check attachment of coolant lines to heater core.

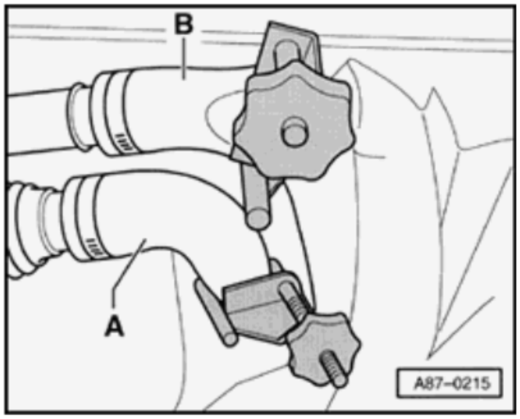

Fig. 223: Identifying Coolant Hoses
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Make sure coolant hoses are properly connected to heater core. observe markings:

A - Supply from cylinder head

B - Return to water pump

- Reinstall components removed (with the exception of drivers storage compartment) in reverse order.
- Bleed coolant circuit -->
    - **19 - ENGINE - COOLING SYSTEM** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
    - **19 - ENGINE - COOLING SYSTEM** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
    - **19 ENGINE - COOLING SYSTEM** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
    - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
    - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
    - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF

.

NOTE:

- **The arrangement of the coolant lines to the heater core of the air conditioner is such that the heater core must also be bled. Proceed as follows:**
- **- Bleed coolant circuit.**
- **- Switch off ignition.**
- **- Carefully open cap at coolant reservoir (observe safety precautions for opening cap) -->**

  - **19 - ENGINE - COOLING SYSTEM for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB**
  - **19 - ENGINE - COOLING SYSTEM for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT**
  - **19 ENGINE - COOLING SYSTEM for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN**
  - **19 - ENGINE - COOLING SYSTEM for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE(S): BKH**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS**
  - **19 - ENGINE - COOLING SYSTEM for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF**

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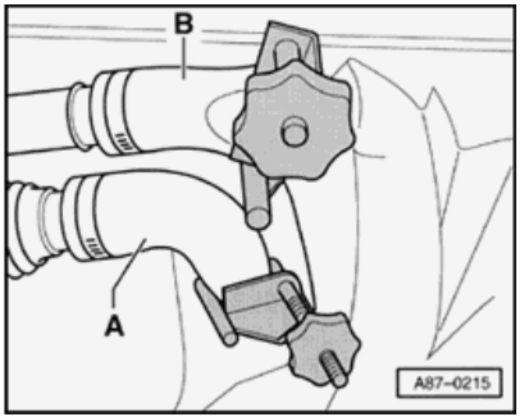

Fig. 224: Identifying Coolant Hoses
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Loosen clamp at coolant hose - **B** -.
- Slide back hose - **B** - until hole in hose is no longer sealed off by line.
- Use cooling system tester V.A.G 1274/hand pump for example to increase pressure in coolant circuit.
- Bleed heater core by way of hose - **B** - until there are no bubbles in coolant emerging.

- Install coolant hose - **B** - and secure with clip.
- Replenish coolant if necessary.

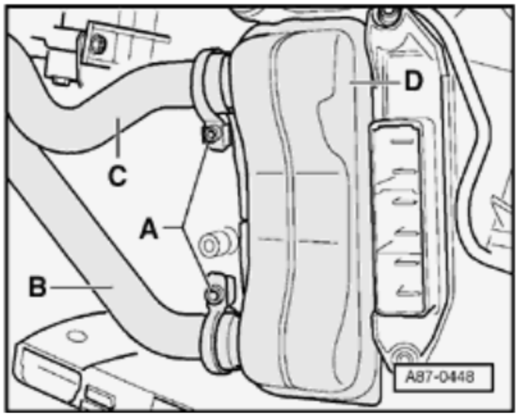

Fig. 225: Identifying Clips, Coolant Lines & Heater Core
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- Check coolant circuit for leaks, paying particular attention to connection between coolant lines and heater core. -->
  - **19 - ENGINE - COOLING SYSTEM** for 1.8 LITER 4-CYL. 5V TURBO ENGINE MECHANICAL, ENGINE CODE(S): AMB
  - **19 - ENGINE - COOLING SYSTEM** for 2.0 LITER 4-CYL. 4V TURBO ENGINE MECHANICAL, ENGINE CODE(S): BPG, BWT
  - **19 ENGINE - COOLING SYSTEM** for 3.0 LITER 6-CYL. 5V ENGINE MECHANICAL, ENGINE CODE(S): AVK, BGN
  - **19 - ENGINE - COOLING SYSTEM** for 3.2 V6 4V ENGINE MECHANICAL, ENGINE CODE (S): BKH
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 4V ENGINE MECHANICAL, ENGINE CODE(S): BNS
  - **19 - ENGINE - COOLING SYSTEM** for 4.2 LITER V8 5V ENGINE MECHANICAL, ENGINE CODE(S): BHF
- Reinstall drivers storage compartment and remaining components removed.
- Attach refrigerant lines to evaporator --> **Refrigerant lines on evaporator flange, removing and installing**.
- Check correct positioning of evaporator hose --> **Evaporator housing drain, checking**.
- Evacuate and recharge refrigerant circuit. --> **87 - AIR CONDITIONING**

NOTE:

- **When installing instrument panel, make sure intermediate defrost piece is properly positioned on air conditioner on insertion and that defroster vent does not squash intermediate piece on installing.**
- **After installing instrument panel, check exit direction and distribution of air flow from defroster vent to windshield.**

HEATING AND A/C UNIT, COMPONENT OVERVIEW

Heating and A/C unit, component overview

- Removing air conditioner --> **Heating and A/C unit, removing and installing**

Heating and A/C unit

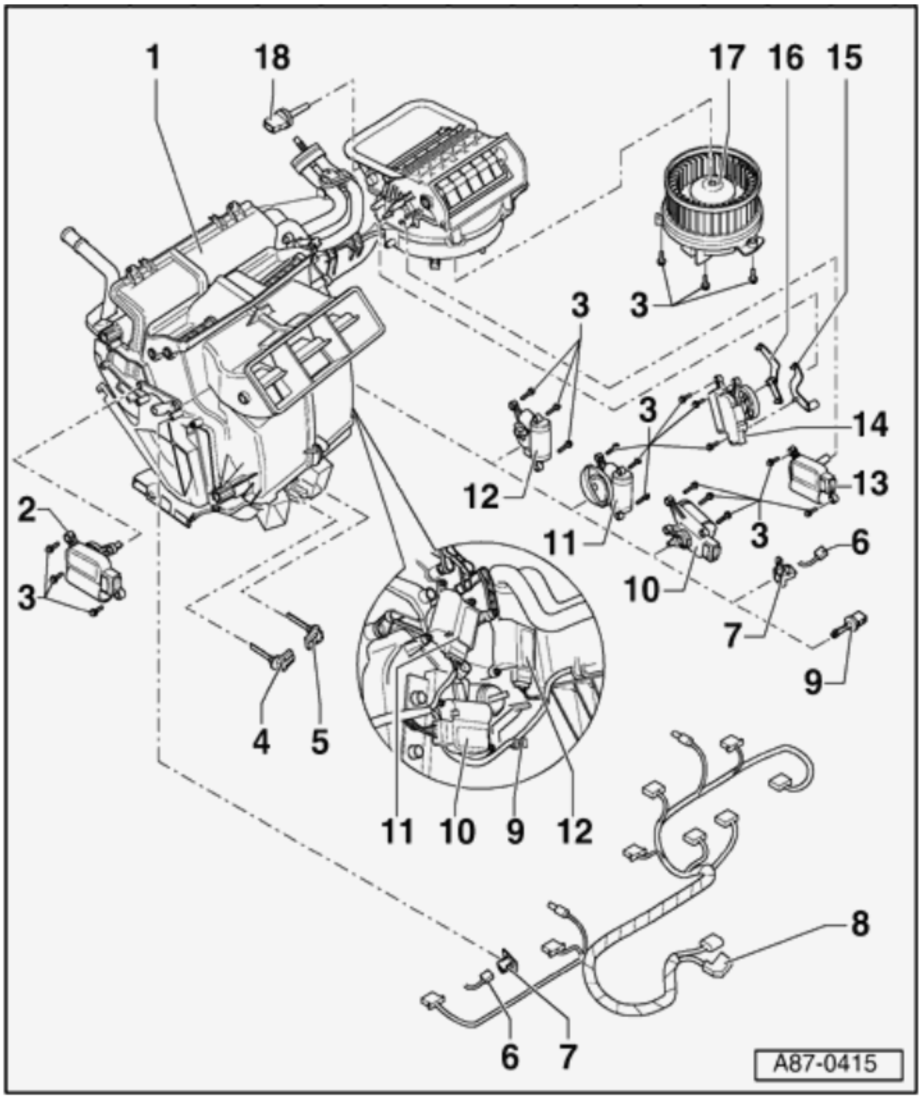

Fig. 226: Heating and A/C unit, component overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Heating and A/C unit

- Removing and installing --> **Heating and A/C unit, removing and installing**
- Removing and installing heater elements and air guides --> **Heating elements and air guides, removing and installing**
- Disassembling and assembling --> **Heating and A/C unit, disassembling and assembling**

2 - Left Temperature Flap Motor V158

- With Left Temperature Flap Potentiometer/Actuator G220
- Lever color code: Red (yellow for right-hand drive vehicles)
- Removing and installing --> **Left Temperature Flap Motor V158 , removing and installing**

3 - Bolt

4 - Left Footwell Vent Temperature Sensor G261

- Removing and installing --> **Left Footwell Vent Temperature Sensor G261 , removing and installing**

5 - Right Footwell Vent Temperature Sensor G262

- Removing and installing --> **Right Footwell Vent Temperature Sensor G262 , removing and installing**

6 - Cable ties

7 - Bracket for wiring harness

8 - "Air conditioner" wiring harness

9 - Evaporator Vent Temperature Sensor G263

- Removing and installing --> **Evaporator Vent Temperature Sensor G263 , removing and installing**

10 - Right Temperature Flap Motor V159

- With Right Temperature Flap Potentiometer/Actuator G221
- Lever color code: dark purple
- Removing and installing --> **Right Temperature Flap Motor V159 , removing and installing**

11 - Central Air Flap Motor V70

- With Central Flap Motor Position Sensor G112
- Cam plate color code: White
- Removing and installing --> **Central Air Flap Motor V70 , removing and installing**

12 - Defroster Flap Motor V107

- With Defroster Flap Motor Position Sensor G135
- Lever color code: Dark green
- Removing and installing --> **Defroster Flap Motor V107 , removing and installing**

13 - Recirculation Flap Motor V113

- With Recirculation Flap Motor Position Sensor G143
- Lever color code: Blue (light blue with additional lugs for activation of fresh-air flap on right-hand drive vehicles)
- Removing and installing --> **Recirculation Flap Motor V113 , removing and installing**

14 - Air Flow Flap Motor V71

- With Back Pressure Flap Motor Position Sensor G113
- Cam plate color code: Light blue
- Removing and installing --> **Defroster Flap Motor V107 , removing and installing**

15 - Lever

16 - Lever

17 - Fresh Air Blower Control Module J126 and Fresh Air Blower V2

- Removing and installing --> **Fresh Air Blower Control Module J126 and Fresh Air Blower V2 , removing and installing**
- The Fresh Air Blower V2 contains the Fresh Air Blower Control Module J126 as an integral component which cannot be replaced separately.

18 - Fresh Air Intake Duct Temperature Sensor G89

- Removing and installing --> **Fresh Air Intake Duct Temperature Sensor G89 , removing and installing**

Heating elements and air guides, removing and installing

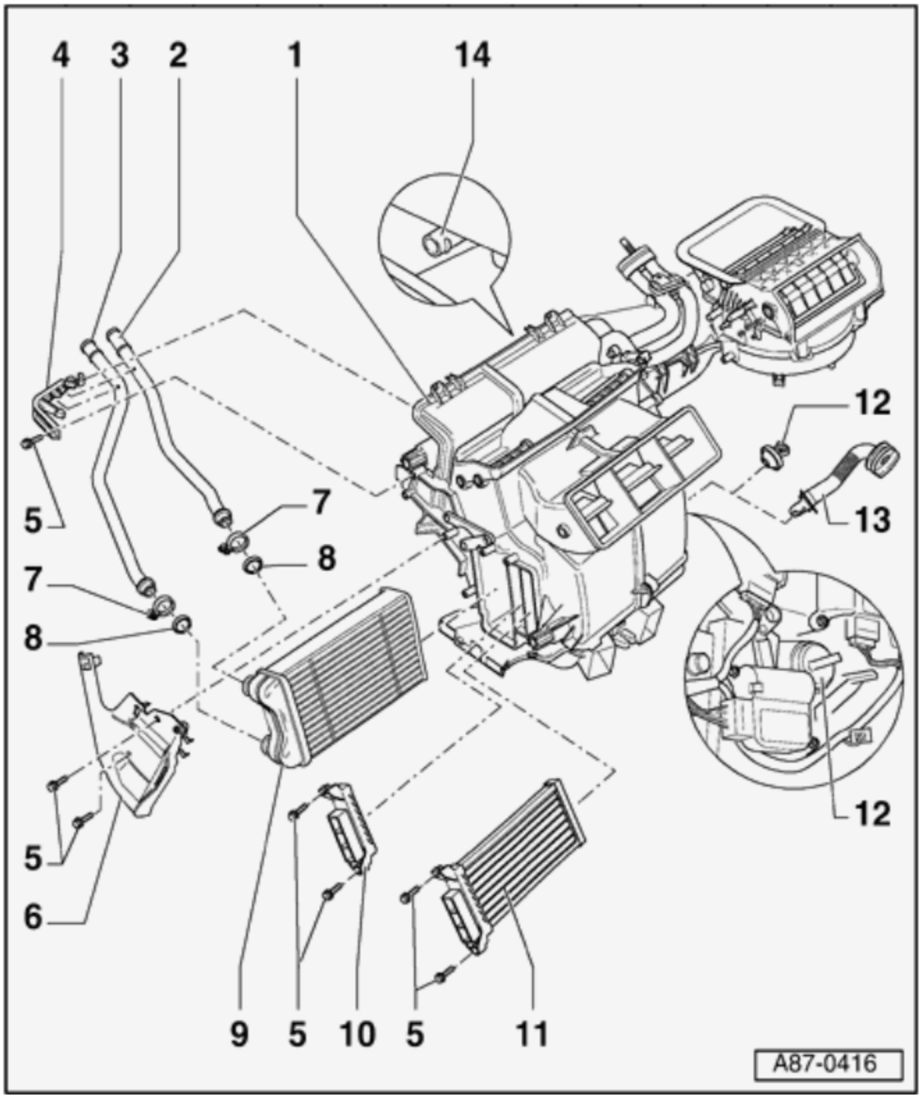

Fig. 227: Heating Elements And Air Guides Remove/Install Components
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Heating and A/C unit

- Removing and installing --> **Heating and A/C unit, removing and installing**
- Disassembling and assembling --> **Heating and A/C unit, disassembling and assembling**

2 - Coolant line

- Return tube

3 - Coolant line

- Supply tube

4 - Bracket for coolant lines

5 - Bolt

6 - Cover for coolant lines

7 - Clamps

- Replace
- Ensure proper fit
- Bolt tightening torque 2.5 Nm

8 - O-ring seal

- Replace

9 - Heating core

- Removing and installing --> **Heating core, removing and installing**

10 - Cover

- Only installed on vehicles with air conditioner with opening

11 - Auxiliary Air Heater Heating Element Z35

- Not available in USA

12 - Sealing plug

- Only installed on vehicles without "glove compartment cooling" as optional extra

13 - Air guide to glove compartment

- Only installed on vehicles with "glove compartment cooling" as optional extra

14 - Connection for evaporator

- Leave the evaporator in the vehicle on removing the air conditioner

Heating and A/C unit, disassembling and assembling

- Removing add-on components from air conditioner --> **Heating and A/C unit**
- Removing heater elements and air guides from air conditioner --> **Heating elements and air guides, removing and installing**

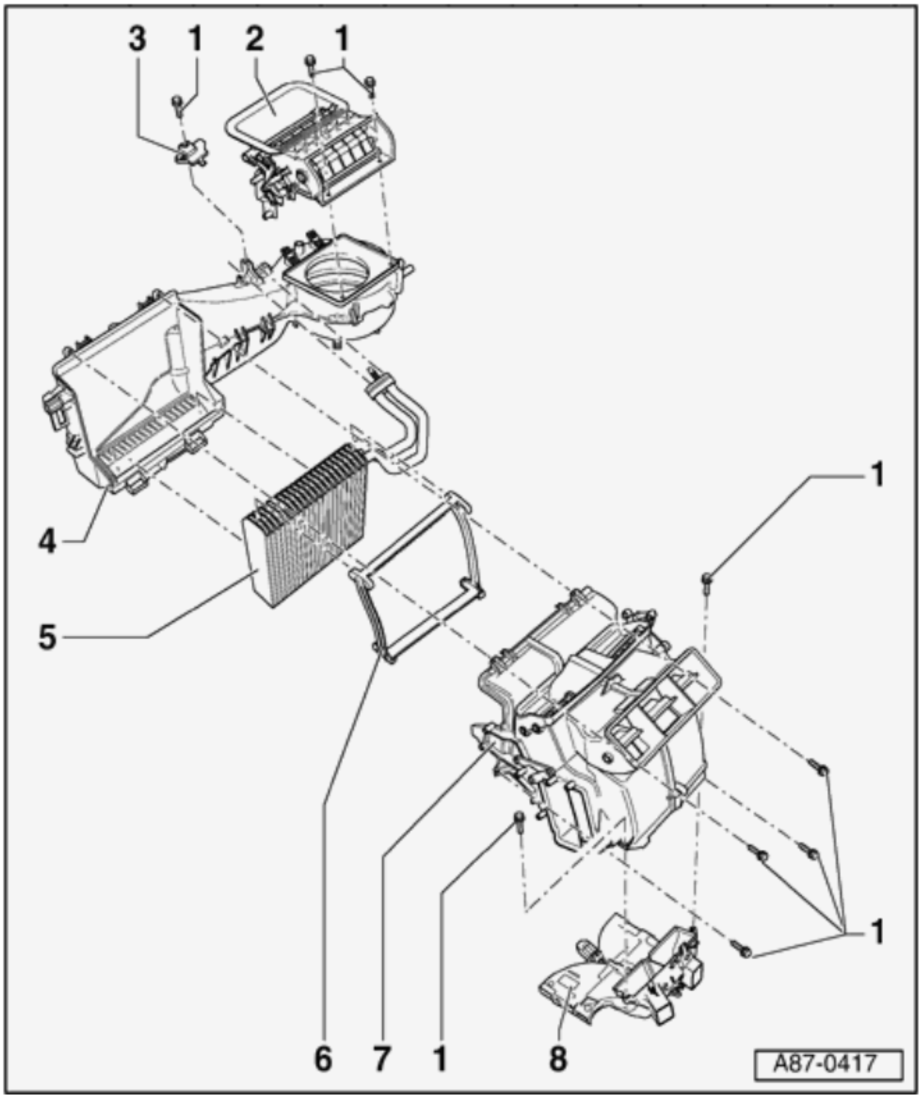

Fig. 228: Heating And A/C Unit, Disassembling/Assembling Overview
Courtesy of VOLKSWAGEN UNITED STATES, INC.

1 - Bolt

2 - Intake housing

- Do not disassemble further
- With recirculated-air flap and two air flow/fresh-air flaps

3 - Bracket

- For evaporator refrigerant lines

4 - Air guide

- Consists of top and bottom section

5 - Evaporator

- Check for complete insulation at refrigerant lines
- Removing and installing --> **Evaporator, removing and installing**
- Installing seal to evaporator --> **Evaporator, removing and installing**
- Check type of seal at connections and refrigerant lines (must be designed for same type of seal) --> **Connections of refrigerant lines to the components (different versions)**
- The evaporator removed contains refrigerant oil which has to be returned to the refrigerant circuit --> **87 - AIR CONDITIONING**

6 - Evaporator seal

- Installing seal to evaporator --> **Evaporator, removing and installing**

7 - Air distributor housing

- Not to be disassembled
- With temperature flaps and air distributor flaps
- The coupling elements in the air distributor housing between temperature flaps 1 and temperature flaps 2 are visible after removing the air distributor housing --> **Coupling element between temperature flaps "1" and "2"**.

8 - Footwell vents, front

- Removing and installing --> **Footwell vents front, removing and installing**

Evaporator, removing and installing

- ○ Remove air conditioner --> **Heating and A/C unit, removing and installing**.
- ○ Remove air conditioner wiring harness from air guide --> **Heating and A/C unit**.
- ○ Remove bracket and cover for coolant lines to heater core and remove heater core with coolant lines --> **Heating elements and air guides, removing and installing**.
- ○ Remove bracket for refrigerant lines and disconnect air guide from air distributor housing --> **Heating and A/C unit, disassembling and assembling**.
- ○ Dismantle air conditioner and remove evaporator from air guide at bottom.

NOTE:

- **Before installing evaporator, check and if necessary clean evaporator.**

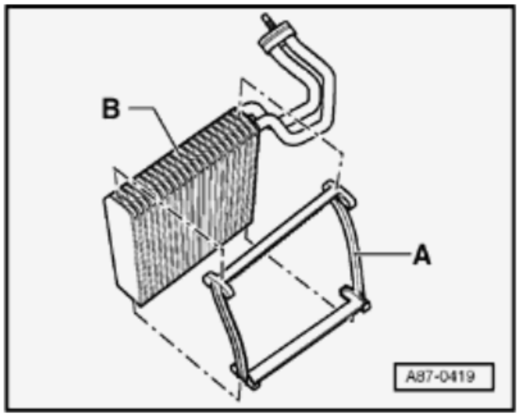

Fig. 229: Installing Seal To Evaporator
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **Install seal - A - to evaporator - B -.**

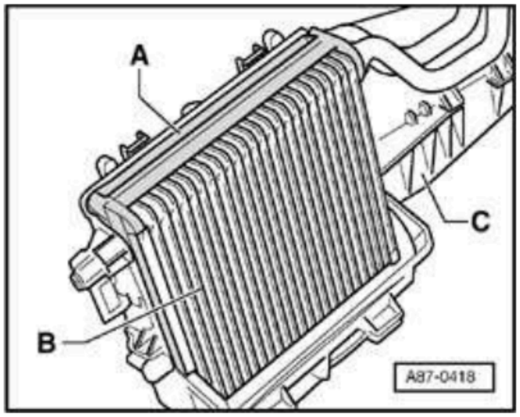

Fig. 230: Identifying Evaporator, Air Guide & Seal
Courtesy of VOLKSWAGEN UNITED STATES, INC.

- **When inserting evaporator - B - in air guide - C - , take care not to alter position of seal - A -. If applicable, moisten seal - A - with a suitable lubricant (e.g. soap solution).**
- **After assembling air guide - C - and air distributor housing, check correct positioning of seal - A - at the opening for the two refrigerant lines.**
- **The evaporator removed contains refrigerant oil which has to be returned to the refrigerant circuit --> 87 - AIR CONDITIONING**
- **Check type of seal at connections and refrigerant lines (must be designed for same type of seal) --> Connections of refrigerant lines to the components (different versions)**

CABIN AIR FILTERS

Dust & Pollen Filter - A4 & S4

REMOVAL & INSTALLATION

NOTE: Manufacturer's terminology for this filter is dust and pollen filter.

CABIN AIR FILTER

NOTE: Filter is located underneath the right plenum chamber cover.

NOTE: Service procedures apply to 2004 and newer S4 models.

Removal & Installation (2002-2007)

1. Open hood. Remove the plenum chamber cover. See **PLENUM CHAMBER COVER**.
2. Unclip cover (B) and remove toward front. See **Fig. 1**.
3. Remove dust and pollen filter (C) from housing.
4. To install dust and pollen filter, reverse removal procedure. When installing filter, ensure arrow mark (D) on edge of filter points in direction of air flow. Pay attention to correct positioning of cover -B- on installation. It must be clipped in at both fasteners -A- as otherwise water will run onto the dust and pollen filter and into the air conditioner.

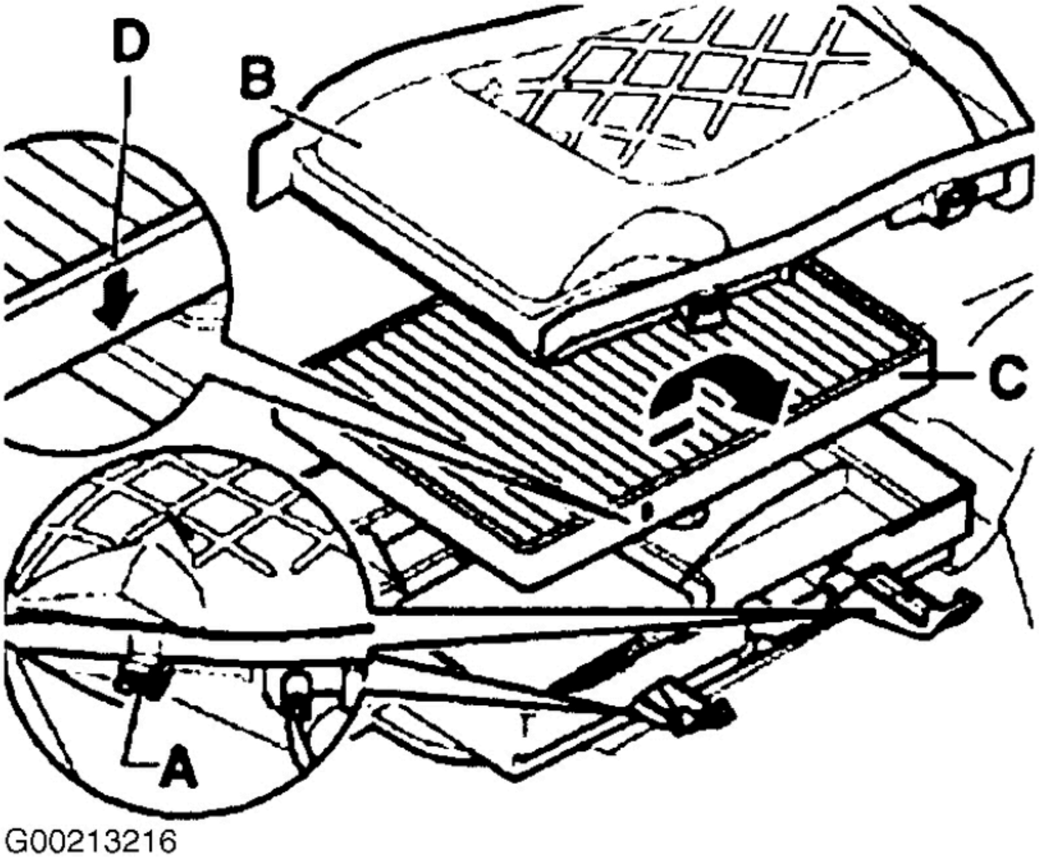

Fig. 1: Removing & Installing Dust & Pollen Filter
Courtesy of AUDI OF AMERICA, INC.

PLENUM CHAMBER COVER

Removal & Installation (2002-2007)

1. Remove rubber seal of plenum chamber cover in direction of arrow. See **Fig. 2**.
2. Remove plenum chamber cover (1) from the front. To install, reverse removal procedure.

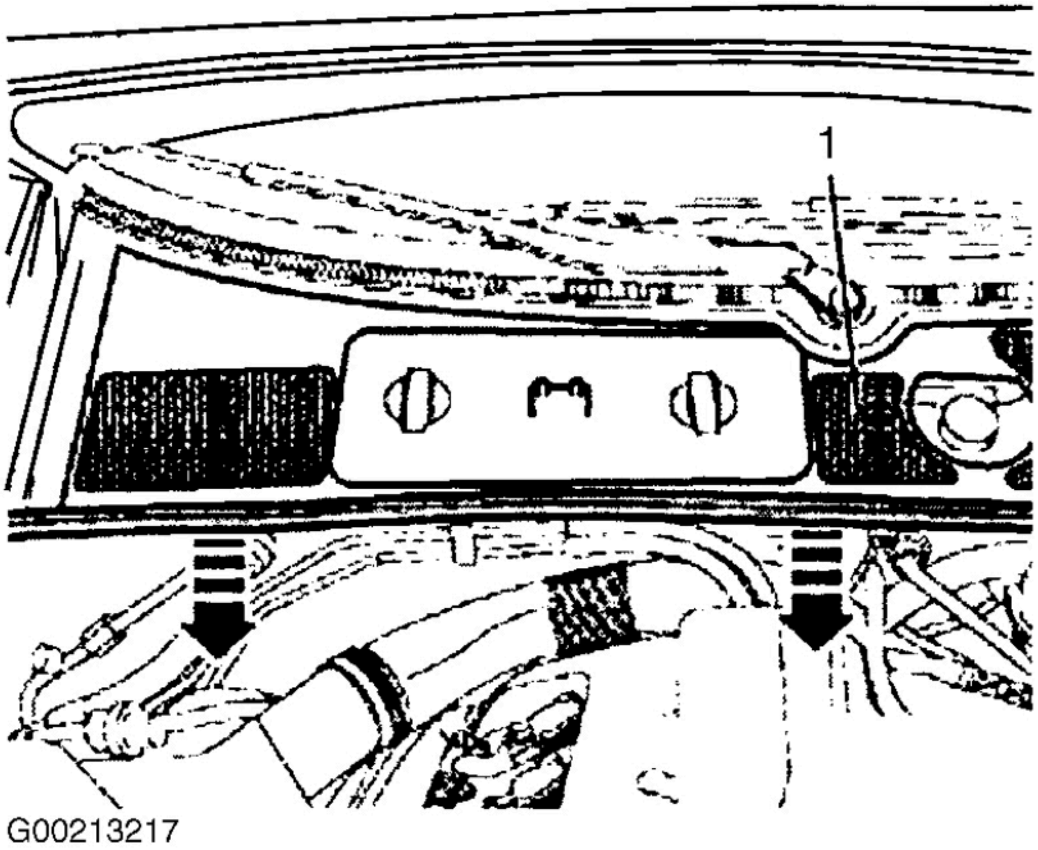

Fig. 2: Removing & Installing Plenum Chamber Cover
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